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Hunterian Oration

ON

JOHN HUNTER

(1728–1793),

HIS AFFAIRS, HABITS, AND OPINIONS.

Delivered at the Royal College of Surgeons of England on Feb. 14th, 1923,

BY SIR JOHN BLAND-SUTTON, F.R.C.S. ENG.,
CONSULTING SURGEON TO THE MIDDLESEX HOSPITAL.

MY knowledge of John Hunter began in a curious way. In my ninth year I was taken to see his famous house at Earl's Court, and shown the den in the garden where he kept wild beasts in order to study them. Being fond of animals, this made a deep impression on my mind. In the simple religious exercises of my childhood, the story of Adam and Eve, the first keepers of a zoological garden, and the famous exploit of Noah, collector and preserver of wild animals, had great charm for me. Some years later the visit came vividly to my mind on finding a dilapidated copy of Ottley's Life of Hunter, which I read eagerly. Ever since I have been deeply interested in all that relates to this extraordinary man, and the preparation of this oration has been a delightful and engrossing occupation.

LONG CALDERWOOD (1728–1748).

John Hunter was born at the farmhouse, Long Calderwood, near Glasgow. The house bears a tablet to the effect that he was born Feb. 13th, 1728. In his life-time the birthday was kept Feb. 14th, and this College drinks to his memory in "solemn silence" on the 14th. Like myself, he was probably born so late at night that in the hurry-scurry the midwife failed to notice whether he appeared just before or shortly after the clock struck 12. John, or Jockie, as he was called at home, the youngest of a family of 10, petted by his mother (his father died in 1741, aged 78), disliked school and hated books. He preferred to lead an out-of-door life, looking after nests, insects, and animals, whilst his brothers got the same education as country gentlemen. At the age of 17 he spent some months with a brother-in-law, a timber merchant and carpenter in Glasgow, and we can well believe he tried his hand with tools; his mother noticed that the "lad showed neatness of hands and quickness of perception in anything that regarded mechanism." What inquisitive boy has not meddled with awls and gimlets, mallets and chisels, hammers and nails, saws and planes? Sharp boys can learn much that is useful in workshops, and a training in joinery teaches neatness and precision. Looking back it is instructive to consider how the farm life fitted John Hunter for his subsequent career. The practical surgeon is a craftsman; Greek and Latin are useful to him for polish, but think of the natural knowledge a smart boy can collect on a farm about the sowing, sprouting, and ripening of crops, the breeding of animals, gelding of colts, spaying of pigs, caponising of cocks, fattening and slaughtering of animals for food, farriery—shoeing and doctoring of horses—observing the wild life in ponds and ditches, fields and hedgerows, trees and heather. In the village he can watch the wheelwright, smith, tinker, glazier, cobbler, and cooper, all experts with simple tools. *Practical knowledge of this kind was useful in that state of life unto which William Hunter called his youngest brother.*

HUMAN ANATOMY (1748–1760).

At the age of 20 John Hunter came to London with the object of assisting his brother William, who had a school of anatomy at the back of his house in Covent-garden. John showed unusual skill in dissecting, worked hard, liked the companionship of men of his own age, and was fond of the theatre. There can be no doubt that he was an example of the medical student skilfully described by Dickens in "Pickwick Papers," 1836, and Albert Smith in *Punch*, 1841. Human anatomy appealed to this uncouth Scot, and William Hunter, a cultured man, moulded John's character, and "bred him to anatomy" in its widest significance with astonishing results. In the summer of 1754 Hunter was busy studying the routes by which the branches of the fifth nerve leave the skull. He unravelled the branches of the olfactory nerve, traced the course of the naso-palatine nerve, and the rambling nerve known as the nasal branch of the ophthalmic division of the fifth: a specimen (Fig. 1) he dissected to show these nerves exists in the Museum in excellent condition.

Hunter's attention was arrested by the uniformity in the course and distribution of nerves in comparison with the vagary of blood-vessels. Even now

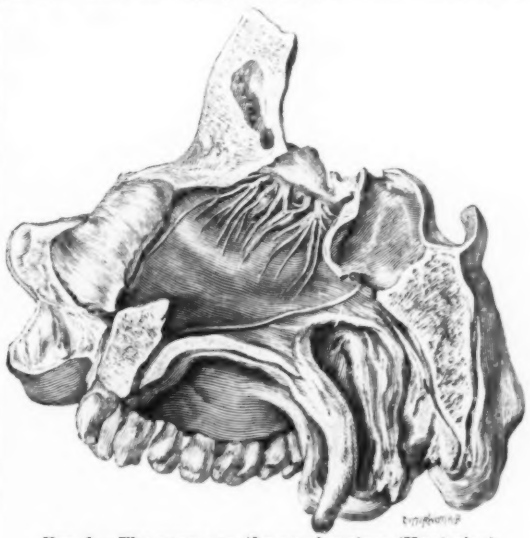

FIG. 1.—The nerves on the nasal septum (Hunterian).

few grasp the problem presented by the branches of the olfactory nerve, which run down the anterior border of the nasal septum. In 1811 Jacobson, a surgeon in the Danish Army, discovered a curious organ lodged in a scroll of cartilage situated on the anterior part of the base of the nasal septum (Fig. 2).

Jacobson's organ—a vestige in man, apes, and whales—is well developed in many mammals. Little is known of its function, but the specialised cells lining its cavity receive the olfactory twigs detected by Hunter. Jacobson's organ is well developed in mammals with long snouts, especially insectivora that find food at dusk; rodents whose young are born blind and live in deep burrows, and kangaroos whose young must find their way into, and pass many weeks snugly ensconced in the mother's warm pouch. The prime service of olfaction is the quest for food. The sense of smell is of first-rate importance to mammals born blind—*it enables them to find the teats of the mother.* The vomero-nasal organ is subsidiary to the olfactory nerve.

The morphology of the canals and foramina by which the cranial nerves leave the skull has always fascinated me, and many delightful hours of my life have been spent unravelling the secrets connected with their methods of exit, re-entrance, and final escape from the skull. The study interested Hunter apart from its morphological aspect. In his days vestiges were merely anatomical curiosities. How much greater the interest for us studying them in the light of man's evolution. For Hunter, morphology was a gleam in the intellectual sky. We revel in the sunshine. Morphology has become the soul of anatomy.

Many regard the dissection of the human body as a repulsive exercise. Teachers of anatomy know well

that many begin to dissect with disgust and overcome the distaste; others continue the study because it fits a man for the medical profession. Some who have found difficulty in retaining or appreciating the facts of anatomy have shone in other professions. On the other hand, men unable to grasp mathematics or the principles of physics have become proficient anatomists. In a few instances men working at a humdrum calling turned to anatomy more or less accidentally and pursued it with zeal. It is easy to understand that the uncouth, unschooled, apparently idle Jockie Hunter when introduced to the dissecting-room became deeply interested in the structure of the human body and found it an absorbing study. *Verily the gunpowder of genius is stored in many brains, but—it needs a match.*

BELLEISLE (1760–1762) AND MARINE ZOOLOGY.

Hunter, during the first period of his life in London (1748–1760), acquired a practical knowledge of human anatomy, but this was mainly a study for the winter months. During the summer he studied surgery, following Cheselden for a season, also Pott, but St. George's Hospital offered better opportunities, and he joined as surgeon's pupil, and later had the good fortune to serve as house surgeon for two years, an invaluable experience. Whilst engaged in the routine of dissecting and teaching he developed a taste for comparative anatomy which became an absorbing passion, enhanced by a change of locality. In the spring of 1759 he had some lung trouble which made it necessary for him to seek change of climate. In 1760 a force was sent from England to take Belleisle, an island near the mouth of the Loire. Hunter applied for an appointment with the expedition and served as staff-surgeon. This gave him a chance of obtaining practical knowledge of gunshot wounds.

Belleisle, well named, is a pretty island now almost tree-less. It is a plateau of 33 square miles, about 130 feet above sea-level; here and there slopes give access to beautiful tracts of white sand. The coast has many grottoes. The most remarkable is La Grotte de l'Apothicairerie, a sanctuary for sea-birds, and their nests in rows on ledges of the rock are supposed to resemble bottles on the shelves of a pharmacy. I spent a week in this island and realised what a change it proved for a man from London, ardently pursuing comparative anatomy. A country new to him in flora and fauna. He took advantage of it by observing, collecting, dissecting, experimenting, and preparing and preserving specimens. Hunter had no knowledge of marine zoology until he landed on this charming island, which afforded him access to barnacles, sea-anemones, sea-stars, sea-nettles, sea-cucumbers, sea-squirts, sea-urchins, squid, huge spider crabs, tunny-fish, and conger eels.

While studying and dissecting these animals the idea came into his mind that living creatures could be arranged in a physiological series, but he was puzzled to ascertain the use of strange organs he met with in marine invertebrates. Like Cuvier, he had to rely on naked-eye dissection, but dissection, however skilful, does not enable anatomists to determine the minute structure of soft organs which is the key to function. These difficulties are shown in Hunter's studies of the reproductive organs of eels. He truly observes "the production of animals out of themselves excites wonder and curiosity." The precise manner in which it is carried out has required centuries of observation for its demonstration. The eggs of flies, butterflies, fishes, frogs, turtles, crocodiles, snakes, and birds appeal to the simplest mind. It was difficult to prove that mammals came from eggs, for their small eggs require a microscope to make them visible. This is true of mice and men.

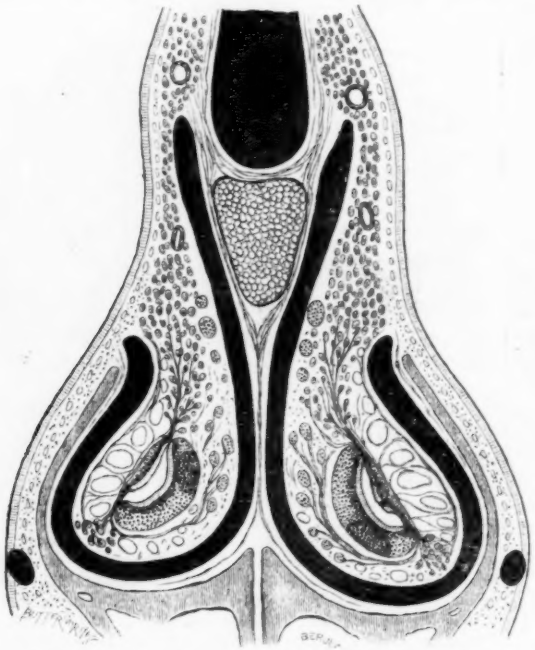

FIG. 2.—Section of a rabbit's nose exposing Jacobson's organ (Klein).

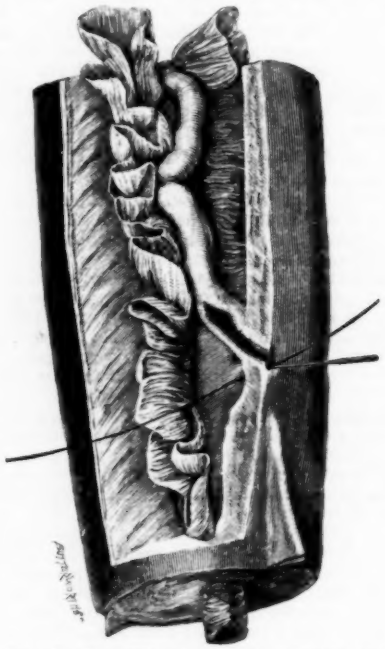

FIG. 3.—Segment of an eel showing the ovary. The bristles mark the end of the rectum and the abdominal pore (Hunterian).

In London he got eels every month of the year from a fishmonger and examined the parts he expected to be the ovary with a magnifier but without result. When he was in Belleisle in the summer of 1761, there was a vast number of conger eels in the sea around the island; he dissected many and satisfied himself that the ruffle-like organs he regarded as ovaries in the common eel were ovaries (Fig. 3), but he did not solve the mystery of the propagation of eels. In 1896 Grassi discovered that eels needed salt water for the development of their reproductive organs and the deep sea is their spawning place. In autumn they migrate to the sea and the dull yellow of their skin changes to silvery glitter; the eyes enlarge, the

pectoral fins become black and change in shape (Fig. 4), and the ova ripen.

Mature eels cease to feed and after spawning die. Recently hatched eels, called *Leptocephali* on account of the small size of their heads, are transparent and free from colour, except the eyes, which shine through the water like black beads. When about 7 cm. long *Leptocephali* cease to feed and change into elvers, which in spring find their way up the rivers in enormous numbers. The migrations of eel-fry are astounding in extent and duration. In some instances larvæ will traverse a quarter of the circumference of the globe to complete their life-history (Schmidt). Elvers in fresh water transform into eels, and in their turn descend the rivers, seek the depths of the sea, where decked in glorious sheen they spawn and die.

Although Hunter did not get on well with his senior colleagues at Belleisle, he was comfortable on his pay, and enjoyed the opportunities for studying natural history, but in 1762 a British expedition to Portugal was the topic of conversation; he was keen to go, and his brother William helped him with the authorities in London to do so.

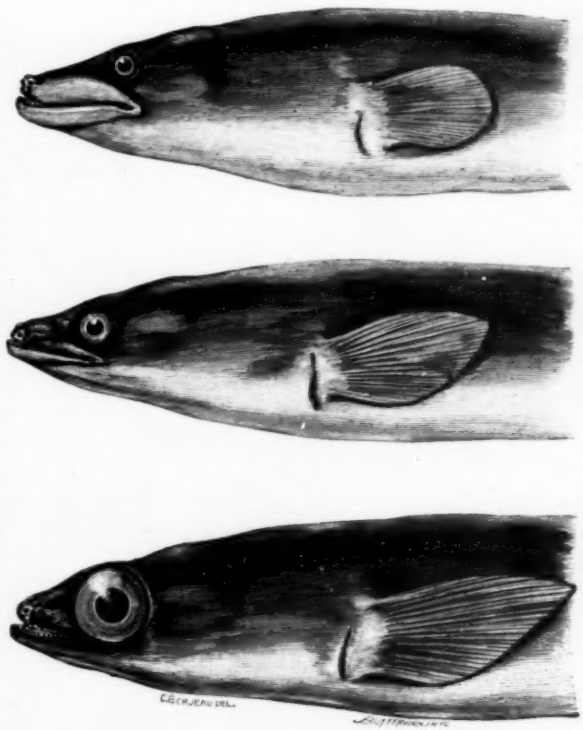

FIG. 4.—Drawings showing the change from the yellow eel with thick lips, small eyes, and compact fin, into the large-eyed silvery eel, which migrates to the ocean, where it reaches maturity, spawns and dies. (From models in the Natural History Museum.)

PORTUGAL AND GEOLOGY (1762–1763).

One of the last episodes of the Seven Years' War was an attempt on the part of France and Spain to invade Portugal. The French and Spanish forces were collected at Ciudad Rodrigo with the object of advancing on Lisbon along the Tagus valley. England decided to support Portugal and an expeditionary force of 7000 men was sent to Lisbon. The British and Portuguese troops, under the command of Count Schambourg-Lippe, an able officer trained in the school of Frederick the Great, assembled on the banks of the Tagus near the Spanish border. The outstanding feature of this almost forgotten campaign was the use, for the first time, of light cavalry which General John Burgoyne was instrumental in introducing into the British army. Under Burgoyne the cavalry rendered distinguished service at Valencia d'Alcantara and in some sharp fighting at Villa Velha. The campaign was concluded by the Peace of Paris, 1763. Mr. Robert Boyne Home was the surgeon attached to the regiment of light horse. John Hunter, transferred from Belleisle to Portugal, was in charge of a hospital. Hunter landed at Lisbon, July, 1762, and in November of the same year he was at Portalegre, near the Spanish frontier 140 miles from Lisbon. General headquarters was at Estremoz, 30 miles south of Portalegre, and on the direct road to Lisbon. Little is known of his doings in Portugal, and it has been supposed he made additional observations on gunshot wounds; for this there was not much opportunity, but with a force of 7000 men there would be accidents and sickness incidental to a campaign in a foreign country.

It is certain that in Portugal Hunter made observations on natural history and collected specimens, some of which are preserved in the Museum, but the most important gain was an inspiration to study geology. The hill on which Portalegre is built stands on a remarkable plateau called Alemtejo (spelt Alentejo in 1763). In an extraordinary tract published about 50 years after Hunter's death, under the title "Observations and Reflexions on Geology," he refers to the extensive plateau called Alentejo, which shows evident signs of its surface being covered by the sea, and refers to the enormous heaps of granite so frequent on the plain. The tract not only contains remarkable observations on geology, but some ideas on the distributions of animals in relation to the antiquity of the world inconsistent with the creation as described in Genesis. He abstained from publishing it on the advice of friends. Recently I visited Portalegre, the Alemtejo, and the surrounding country, and satisfied myself that Hunter while living on the plain had excellent inducements to study botany as well as geology, for he was among a sub-tropical flora, and at Lisbon he had opportunities of collecting specimens and adding to the knowledge of marine zoology he had acquired at Belleisle.

Hunter's domestic life was influenced in an important manner by the affairs of Portugal, for Home, surgeon to Burgoyne's regiment of light horse, became his friend. Hunter on his return to England got engaged to Home's daughter, Anne. It was a long engagement, for they were not married till 1771. Mrs. Hunter's younger brother Everard, became Hunter's house-pupil, then his assistant, and finally executor.

Sir Everard Home and Matthew Baillie founded the Hunterian Oration in 1813 and Everard Home was the first orator, 1814.

EARL'S COURT.

On the conclusion of peace Hunter returned to London a staff-surgeon and deputy-purveyor on half pay. He took a house in Golden-square and started to practise. His half pay, probably half a guinea a day, helped to pay the rent. He opened a room for dissecting, made teaching preparations, and while waiting for patients, like many of us, taught human anatomy for capital and comparative anatomy for interest. The classes were neither large nor lucrative, for he was not a good lecturer. In 1765 he bought the lease of three pieces of land at Earl's Court, built a house, established a small menagerie, and made observations and experiments:

> On gizzards of gulls, hawks and owls,
> The heat of lizards, spurs of fowls;
> Bones of pigs, air-sacs of eagles,
> Moaning dingos, barking beagles;
> Sleek opossums, prickly hedgehogs,
> Buffaloes, dormice, wolves and dogs.

Leopards and jackals lived in the den, buffaloes, stallions, sheep, goats, and rams occupied the stables. A mulberry tree furnished leaves for the silkworms

and St. John's wort supplied pollen for bees. There was a pond for the ducks and geese which laid eggs for the table and for embryological studies. He made observation hives for the bees, discovered that their wax is a secretion, and left some excellent notes on the relation of vegetables to animal fat. With the aid of Ramsden's delicate thermometers he discovered the significance of the terms hot-blooded and cold-blooded animals. He would have been astonished to learn that muscular action is the main source of animal heat! Hunter failed to grasp the importance of measuring the temperature of the body for clinical purposes. Indeed, its value was not appreciated until the middle of the nineteenth century.

Earl's Court remained a bachelor's residence for seven years. In 1771 John Hunter, aged 43, married Anne Home, aged 29, a charming, amiable, and accomplished spinster, who, in due course, added to the physiologist's paradise the most delightful of all objects of natural history — children. Mrs. Hunter had a brother, Robert Home, an artist, who painted a portrait of Hunter which eventually came into the possession of the Royal Society (Fig. 5). In 1787 Hunter read a paper before that society on some observations "tending to show that the wolf, jackal, and dog are all of the same species." The odd dog in the picture is supposed to be the offspring of a half-bred wolf-bitch and an English mastiff. The dog died in 1782. The portrait represents Hunter about the age of 45. He describes himself at this period in a letter to James Baillie, his brother-in-law, as "one of the happyst men living" (1775), in spite of the fact that he had to raise money on the Earl's Court property, a fact concerning which Dr. G. C. Peachey has found unimpeachable documentary evidence. Hunter was a resident at Earl's Court 30 years. In 1877 the Royal College of Surgeons, and a few friends, placed a window to his memory in St. Mary Abbott's Church, Kensington. One of the principal lights represents St. Paul on the island of Melita casting a viper off his hand.

JOHN HUNTER.

FIG. 5.—The picture is by Robert Home. The odd dog is supposed to be the offspring of a half-bred wolf-bitch and a mastiff.

THE MUSEUM.

Nothing is known of the time Hunter began to collect specimens with the definite object of establishing a comprehensive museum of comparative anatomy. The museum owes its origin to the peculiar conditions under which medical education was carried on in London in the eighteenth century. Schools of anatomy were private ventures. It was necessary for the surgeon who owned and managed the school to illustrate his lectures with skilfully prepared specimens. Such preparations are more useful than diagrams, wax models, or drawings on blackboards, even when made with skill and coloured chalk. Hunter made many preparations for his brother, and some exist in the Hunterian Museum at Glasgow, but when he returned to London in 1763 he brought with him specimens of natural history from Belleisle and Portugal, and these formed the nucleus of the collection for illustrating comparative anatomy. It is a fair inference that the specimens were collected to subserve teaching purposes directly connected with his lectures, but it grew and widened until it became a museum that could be regarded as a discourse on the human body in relation to the animal kingdom. Gradually its founder's ideas expanded, and he conceived that it should be an ample illustration of life exhibited in the vast chain of organised beings, living and extinct, by a display of the various structures in which the functions of life are carried on.

In 1783 the lease of the house, 42, Jermyn-street, which he had acquired from his brother William, expired. He then took premises in Leicester-square and built his famous museum. Sir Joshua Reynolds lived in the square, and the two men subsequently helped each other to what artists jokingly call immortality—one as subject, the other as painter. The famous picture is the most cherished possession of our College. When Baron Grant furbished up Leicester-square and laid out the garden in 1874, a colossal bust of Hunter was placed in one corner and a bust of Reynolds in another.

Hunter's example in collecting specimens was contagious. Blizzard, Astley Cooper, Heaviside, and other surgeons formed collections, now dispersed. The care entailed in the maintenance and supervision of such museums is very great. Hunter's museum nearly perished. His executors, Matthew Baillie and Everard Home, with sound judgment, retained the services of William Clift, who preserved the specimens from decay by the judicious use of two gallons of spirit occasionally. He had no books, so he read and made extracts from Hunter's manuscripts. The transcripts were made from some of the notes afterwards destroyed by Everard Home. They were published by Owen under the title "Essays and Observations," in 1861. For seven years Clift received 7*s.* weekly and meekly as wages. In return for these services he became the first conservator when the Government bought the collection and intrusted it to the College of Surgeons in 1800. Clift was conservator till 1842. The museum contains in orderly array, big and little, of every living thing Hunter

could secure. Shrimps and sharks, humming-birds and ostriches, shrews and whales. Of the human kind, dwarfs and giants. Animals now living on the earth were not enough, he must have fossil forms. The fame of Hunter was such that new or rare animals were brought to London for his opinion. When John White returned to England (1790) from New South Wales "the nondescript animals of that settlement"—kangaroo, potoroo, tapua roo, and the like were handed to Hunter for investigation. The museum is now so rich in specimens illustrating the anatomy of vertebrates, living or extinct, normal and abnormal, that no one who is prudent ventures to publish anything he thinks new without examining the correlated specimens in the museum. It abounds in surprises, and is in a sense an anatomical Valhalla.

PATHOLOGY.

Specimens illustrating "diseased action" were preserved in the museum. Pathology is a department of biology. Hunter's ideas of many pathological processes were crude; without the aid of a compound microscope, section-cutting and staining methods, his knowledge of tumours was not above that of the farrier. Shepherds talk of corns, warts, blains, wens, and blemishes. The slaughter-house supplied him with melanotic tumours from oxen, and from the knacker's yard he got similar things from horses. Graveyards yielded calcified fibroids and tumours of bones. In Hunter's day, and for many years afterwards, pathological specimens were mainly spoils from the dead-house; to-day they are prizes from the operation theatre.

The history of surgical progress during the last 50 years can be traced in the museum catalogue. The hall in the museum that enshrines Hunter's statue is a Temple of Pathology, admirably arranged and catalogued by Shattock. It should stimulate surgeons to study the *science as well as practise the art of surgery*.

EMBRYOLOGY.

Hunter took keen interest in monsters, not from curiosity but as part of a great scheme showing the phases of life. The collection of malformations in the museum is the finest and most comprehensive in the world. He was aware of the importance of a knowledge of the developmental stages of animals, and applied himself to study the chick. He studied the goose because its chick is bigger than that of the fowl. He tried the swan but could not get sufficient eggs. He tried to obtain ostrich eggs but only got two in 30 years, and made nothing out of them. The flock of geese for embryologic work was kept at Earl's Court for 30 years. Although he obtained much first-hand knowledge from this work and some excellent drawings, he discovered little of importance, but left among his notes, awkwardly expressed, for masters of science are rarely masters of style—*Embryology indicates the steps by which higher forms in a group of animals have been evolved from a lower*.

Hunter clearly recognised the importance of studying the developmental stages of animals, and 30 years after his death von Baer discovered the human ovum and realised that embryology is the key to the knowledge of the human body.

Hunter collected books but read little. Probably he never read the "System of Philosophy" written by Lucretius, although both men reasoned on inexplicable things.

Lucretius.—Before the horns of a calf appear and sprout he butts when angry and pushes passionately. But the cubs of panthers, and lion's whelps, already fight with claws and feet, and biting, when their teeth and claws are scarcely yet formed.

Hunter.—A young duckling runs into the water the moment it sees it.

A hen with ducklings seeing them run into the water is unhappy.

A duck with chickens tries to induce them to enter the water—they run about the bank.

In relation to these paragraphs it may be stated that microscopes and serial sections, aided by the most exquisite stains, throw no light on instinct. Though dogs and pigs do not interbreed, the maternal instinct may be so strong in a bitch that she will suckle a sow's orphans (Fig. 6). *Pity is not an exclusive attribute of gods and men.*

FIG. 6.—Alsatian wolf-hound bitch, whose puppies had died, suckled six little pigs. (*Veterinary Journal*, 1920.)

FEATHER-THICKETS.

In March, 1778, Hunter made this request of his old pupil and friend, Jenner:—

When you have a blackbird's nest—viz., one with four young ones—take one and put it boldly into spirit by the head, extending the wings and legs. Observe when the feathers begin to sprout, then take another, and serve it in the same way; then take another and fourth, so as to get a series of the growth of feathers; but the last or fourth, must not be so old as the feathers to cover other parts where feathers do not grow. This you will understand better when you come to make the trial.

Jenner carried out these instructions admirably (Figs. 7 and 8). About 40 years after Hunter's death Owen found among the MS., transcribed by the faithful Clift, some notes on the situation of feathers:—

Although the feathers of birds appear to be an entire and uniform covering they do not arise equally from every part of the body, but only from such parts of the skin as are least likely to be affected by the motion of the contiguous parts, such as the motion of the limbs. The feathers arise pretty equally on the head where there is no motion; and along the back; on the wings between joint and joint, as also on the thighs and legs, the whole making the bird a partial coat of mail. As they do not arise from every part of the skin equally, they must be proportionally thick set where they do arise. The places of origin of feathers are very observable in a bird that has been plucked; but still more so in young birds just feathering, more especially of such as have little down, and of which the clumps of feathers, from their colour as in the young blackbird, present a great contrast with the skin. In the interstices of the clumps of feathers there are others disposed irregularly, but so sparingly as not to interfere with the motion of the part.

Hunter named each feather-thicket according to its situation. In 1833 Nitzsch, unaware of Hunter's observation, published "Pterylographia Avium," a study of the distribution of feathers. He called the thickets, *Pterylæ*—feather-forests, and the featherless spaces *Apteria*.

Pterylosis.—The arrangement of feather-tracts is now used by ornithologists as an aid in the classification of birds. Oken cast ridicule upon it; he could not refrain from laughter when he looked at the plates in Nitzsch's book, since they reminded him of the plucked fowls in a poulterer's shop! We must admit that the idea is comic. Newton referring to this joke, adds: "It might as well be urged as an objection to the plates in many anatomical books that they call to mind a butcher's shop!" Hunter had his jibe at the systematists, for, in his opinion, natural historians are more pleased if they can class an animal, than they would be if they could find any use such an animal would be to society.

The value of the feather-distribution (pterylosis) in classification depends on the fact that feather-tracts, like beaks and feet, are modified by the habits of the bird. These callow blackbirds are as instructive as a parable. They prove Hunter's skill in selecting and preparing specimens for museum. The contrast in colour—black and white—is excellent, and the skill shown in mounting them undeniable. They were

FIG. 7.—Callow Blackbird (Owen).

prepared in 1778 and remained in obscurity until Owen found them 40 years after Hunter's death.

Hunter had a great power of observation, but lacked the gift of exposition. His discovery was like a lighted candle under a bushel. Half a century later Nitzsch detected the value of pterylosis and urged its importance in classification in spite of ridicule. It is one thing to discover a new fact, but it is another to make contemporaries accept it, or appreciate its value.

FIG 8.—Nestling Blackbird (Owen).

THE HORSE.

Hunter studied the horse carefully as an anatomist, and as a surgeon. It was natural that he should study an animal that can walk quickly, amble easily, trot gracefully, or gallop with exceeding swiftness on limbs, each of which ends in a modified toe or finger, and in spite of so many anomalies, be useful to man. He was thoroughly familiar with equine anatomy, the teeth especially, and left a careful description of the curious guttural pouches, connected with the pharyngeal orifices of the Eustachian tubes, which are often a source of inconvenience to horses; and he discovered the curious conjugal ligament which connects the heads of the ribs on opposite sides of the spine. This ligament, well developed also in the seal (Fig. 9), is homologous with the transverse ligament that keeps the odontoid process in position, and which excites curiosity in every human anatomist.

Scattered among his "Observations" there are many references to morbid changes in horses and cattle, and in the museum there are specimens illustrating tumour diseases of horses, oxen, sheep, and pigs.

Hunter helped to found the Royal Veterinary College, 1791; he was a vice-president, and with Cline, served on a committee that approved of the appointment of Vian St. Bel as the first professor of the College. Among

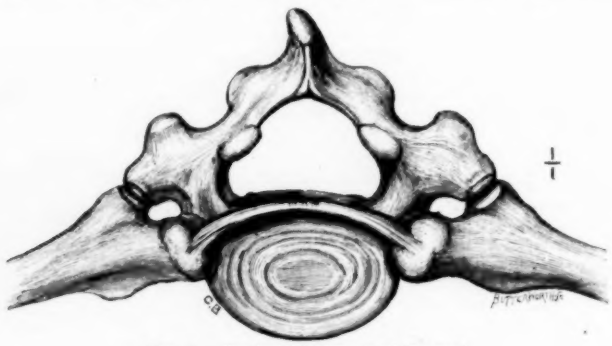

FIG. 9.—Conjugal ligament of the seal.

the first operations performed by St. Bel was one for the removal of "two accessory feet which grew from the fetlocks of the two forelegs." Hunter assisted and gave him some useful and friendly hints in the course of the operation which was followed by good consequences. St. Bel died in 1793, probably from glanders. His early and unexpected death led to some difficulty, and Hunter, in order to help in the emergency, arranged for the students to have admission to the lectures of the leading teachers in the hospital. The names mentioned in this connexion were Dr. Fordyce, Dr. Baillie, Cruickshanks, and Everard Home. The directors of the College sent Hunter a letter of thanks for his help, which he acknowledged in a letter from Leicester-square, Oct. 2nd, 1793, exactly two weeks before he died. This letter long remained a treasured possession of that College, but it has been lost.

Hunter's coach was drawn by a pair of bay stone horses. Jesse Foot, his detractor, saw these horses in Piccadilly returning from Hunter's funeral at St. Martin's Church; the circumstance recalled to his mind Virgil's account of the war-horse Æthon, in the funeral procession of Young Pallas, shedding tears!

WHALES.

Whales are the biggest animals that exist or have existed on the earth and their skeletons are the most impressive things in the museum. Hunter recognised that whales are land mammals modified to live in the water. He dissected them when he got the opportunity and discovered their semicircular canals. The organ of hearing in these huge mammals is modified in a remarkable manner. The pinna is absent; the meatus is narrow and, in some species, nearly obliterated. The tympanic is a shell of bone; the ossicles—malleus, incus, and stapes—are present. The tympanics are so loosely attached to the skull that when the bodies of whales decompose these bones fall away. In the Central Pacific, detached tympanics, petrosals, and shark's teeth litter the floor of the ocean. Hunter studied the semicircular canals of fishes before he went to Belleisle, and it is reasonable to believe that the structure of the internal ear interested him for 30 years.

Lillie, in 1910 and 1915, made some dissections of the internal ear of whales and explains the vestigeal character of the external auditory meatus by suggesting that whales hear through their nasal passage which opens on the top of their heads. The nostrils collect the sound waves to be conducted through the blow-holes to the huge guttural pouches and the Eustachian tubes, thence to the tympanic bullæ which act as sounding boxes and transmit the sound waves to the chain of ossicles. The shell-like tympanic

probably intensifies the sound waves in the water. There is no doubt that whales rely on the sense of hearing and appreciate the pulsations caused by waves striking rocks or the approach of an enemy. These shell-shaped bones are often kept as curiosities. Here is one (Fig. 10) used as a paper-weight by a lady of fashion, yet it collected sound waves that enabled a mighty whale to move through unfathomable

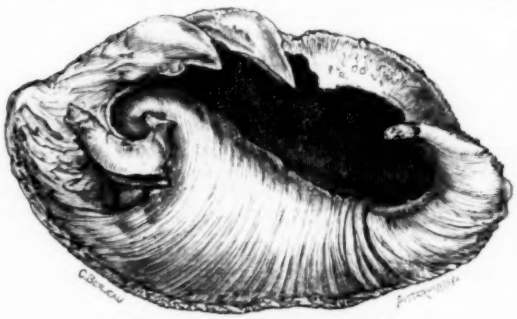

FIG. 10.—Tympanic of a whale.

waters with the same certainty that the compass enables mariners to guide ships across the trackless ocean.

Intrepid whalemen who have watched whales in the solitary ocean regard them as timid and inoffensive, with large brown eyes and affectionate in disposition to their young. This character does not apply to the toothed whale. The "killer" whale has a large dorsal fin and there has been much speculation in regard to its use. Herman Melville in "Moby Dick" states that the flukes of whales are tactile organs of great delicacy. I believe that the median fin of a "killer" is a tactile organ. On watching "killers" rise to the surface, this dorsal fin rises like the periscope of a submarine (Fig. 11).

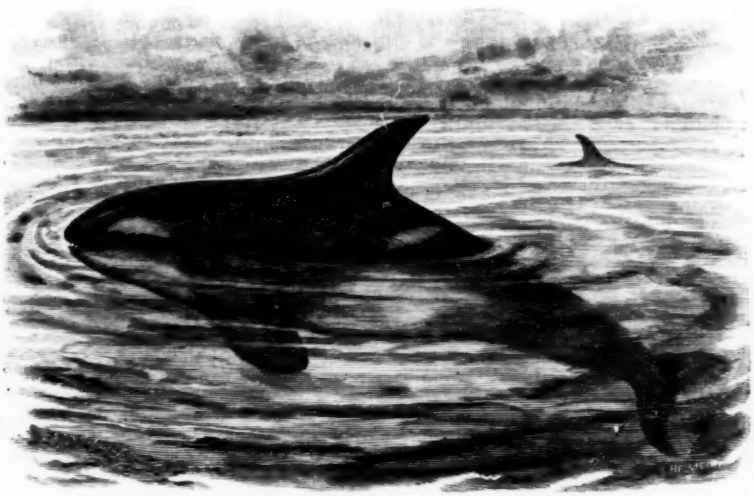

FIG. 11.—*Orca gladiator*. Though Killer whales are evil-looking they glide gracefully through the sea impelled by their powerful flukes.

Captain Wild has described to me tricks of *Orca* worthy of a crocodile. It is not easy for a "killer" to seize a seal on the edge of the ice, but he swims under it, and rising suddenly, breaks off a piece with the object of dislodging the seal. If the seal retreats crafty *Orca* follows the animal as it lumbers over the ice and breaks off successive pieces in his endeavours to seize the creature. In such tricks the dorsal fin may be a reliable tactile organ like the whiskers of cats and the feelers of cat-fishes. "Killer" whales have formidable teeth, insatiable appetites, hunt in packs like wolves, and attack the biggest whales.

When Hunter died in 1793, and for many years afterwards, his skeletons of whales were the only examples existing in a museum in England.

OPOSSUMS.

Hunter kept opossums at Earl's Court, and about 1790, when he was studying the marsupials which John White brought from New South Wales, he wrote: "There is something in the mode of propagation in the opossum that deviates from all others." He kept many alive, "yet never could get them to breed." The manner in which the fœtus gets into the pouch, after puzzling naturalists for more than a century, has received a simple explanation for opossums and kangaroos. A. Goerling, of Perth, Australia, discovered in 1906 that when the naked fœtus is extruded from the vagina it is blind, but the arms are well developed, the fingers furnished with claws, and it can open and close its hands like the paws of a cat. When extruded the mother licks the birth-membranes and sets the fœtus free, which makes its way through the fur to the opening of the pouch, enters, finds a teat, and fastens itself on with the powerful lips. (Fig. 12). The naked little wanderer requires 30 minutes to make the journey, and travels through the mother's fur moving the arms alternately as in swimming and leaves a track in the fur which lasts some hours. We may believe that in this curious journey it is helped by Jacobson's organ; in the pouch the little fellow finds protection, warmth, and nourishment, and remains there till its eyes are opened, and when it has donned its fur coat, as many have seen with delight at the Zoo, the little kangaroo looks over the rim of the pouch, and gazes with curiosity on the world at large, and in a way that would have amused John Hunter. C. G. Hartman discovered that the fœtuses of the opossum, *Didelphys virginiana* find their way into the pouch in the same way as the fœtal kangaroos. (*Anat. Record*, 1920, xix., 251.)

FIG. 12.—Young kangaroo hanging on the teat by its lips. (Museum, Royal College of Surgeons).

FOSSILS AND OWEN.

Belleisle and Portugal had much the same influence on Hunter that South America had on Darwin, especially in relation to geology, and had unexpected consequences, for few suspected his interest in fossils, although they were often sent to him, especially by Jenner. The discovery of the collection of fossils is one of the romances of the Museum. When Richard Owen, in 1826, started to practise as a surgeon near the College, Abernethy, concerned at the neglected condition of the Museum, induced his old pupil to assist in cataloguing it. In this way Owen became acquainted with Clift and obtained access to the collection. A few years later he married Clift's daughter, was gradually weaned from medical practice, and devoted himself to comparative anatomy. While busy with the catalogue he unexpectedly found Hunter's store of fossils, and displayed them in the Museum when it was

rearranged in 1837. Startled by the number and variety of the specimens he began to work at them seriously. Nothing illustrates more thoroughly the parable of the sower than these fossils. Nearly all this seed sown by Hunter fell on stony ground, but some fell and grew in Owen's fertile brain. He dissected the bodies of animals to enable him to study fossils and become essentially a palæontologist, revelling in the reconstruction of extinct animals. The Museum contains reconstructed skeletons of huge ground-sloths; the gigantic armadillo with an "osseous coat in compartments," and a huge bird, the Moa, towering over all of them. Skeletons of sloths and armadilloes, turtles and crocodiles, with ostriches and emus, stand in rows demonstrating the truth of Owen's deductions. When these skeletons were mounted evolution and mammalian descent had not become the stock phrases of zoological zealots. To-day zoologists include extinct as well as living animals in their lists. Before Darwin classification was a mania, since Darwin zoologists persistently endeavour to bridge gaps. Hunter's fossils turned Owen's thoughts to palæontology and he led men to take an interest in animals, huge and weird, that once moved about the earth and then passed into the twilight and silence of the past.

THE ORATION.

A man who achieves greatness in any calling inspires others to follow his example. No man retains prominence unless he has impressed others to believe in him and magnify his name. Those who have been closely associated with a masterful teacher and speak well of him are often mockingly called disciples by his contemporaries. Many who during the life-time of a great investigator, or a reformer, were detractors are often loudest in appraising him when dead. When our friends are alive we hesitate to say much about them in their presence—except in after-dinner speeches. As soon as they are dead we are apt, in a paroxysm of sympathy, to overpraise their work. Hunter was in advance of his time, his contemporaries could not appreciate the value of the work, and some admirers overrate it.

The delivery of the oration is justified. It is necessary to remind men of their benefactors; even the holiest saints require to have their names preserved by shrines, chantries, cathedrals, or festivals. Are there not Saints' days in the calendar of every church—Protestant, Greek, or Roman? Æsculapius had two famous sons; of these Machaon healed injuries, and

FIG. 13.

Podalirius could recognise what was not visible to the eye and tended what could not be healed. They served with the army in the Trojan war. Podalirius returning from the war was wrecked at Caria, Asia Minor. He had the good luck to cure a princess of falling sickness (probably hysteria) and in consequence acquired a great reputation. The Carians after his death built a temple in his honour and paid him divine honours. This temple has long since disappeared, but his effigy survives on the College seal (Fig. 13).

The essential work of Hunter's life was the useful specimens he prepared and left for successors. These specimens, safeguarded by faithful Clift, catalogued by sagacious Owen and Paget, and such able curators as Flower and Shattock, are now in the care of Keith, who lacks none of Hunter's enthusiasm but totally eclipses him in the art of expedition. The Museum was never in safer custody.

If I could believe the soul of man survives the dissolution of his body, I would believe the spirit of John Hunter haunts the galleries of this wonderful Museum, but I do believe his *influence is a quickening spirit among surgeons to-day.*

A Lecture

ON THE

PHYSICO-CHEMICAL MECHANISM OF CELL-RESPIRATION.

Delivered at the University of Cambridge

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To speak here concerning cell- and tissue-respiration and the exchange of energy in muscle would seem to require boldness on my part, for I am well aware that, to use your own saying, I am only "bringing coals to Newcastle." But if in spite of this fact I undertake the task of doing so, I must first state briefly which problems seem to me most vital with regard to general cell-respiration. Respiration is no mere external attribute of living matter; it is a central life-process, supporting the entire complicated machinery of the living being.

If we desire to reduce the processes of life to physical and chemical terms, we must inquire as to what it is that distinguishes respiration from the chemical reactions of the inorganic world. There seem to me to be two more important points of difference. The substances broken down and mainly oxidised in the animal body are not actually in equilibrium with the oxygen of the air; they are in a false equilibrium, for on the removal of impediments to reaction—for example, under sufficient rise of temperature—they yield, with oxygen, carbon dioxide, water, sulphuric acid, ammonia, &c.

Such impediments prevent protein or sugar in aqueous solution from being burnt by the oxygen of the air outside the organism. What are the circumstances which in the case of the cell remove resistance to reactions and increase their velocity to the height of oxygen respiration? The general answer that it is done by cell enzymes or catalysts cannot satisfy us. First, we want to see their existence demonstrated; and secondly, we have to do with special chemical processes which are distinguished in other respects from the processes of inorganic nature. These work-producing chemical processes not only possess a large store of available free energy, but also put it more or less clearly at the disposal of the cell. We know that in this case energy is changed into work not by way of heat, but directly; this fact postulates a definite order in, and organisation of, the chemical process. This direct transformation requires a machine-like arrangement or structure—as seen, for example, in a galvanic element. (Of course, the transformation of heat into mechanical work in the case of the steam-engine also requires a machine-like arrangement, but there the chemical processes included in the heating of the boiler need no elaborate organisation.)

TWO PROBLEMS.

The two problems now presented—the cause of the reaction velocity of vital oxidations, and the transformation of the oxidation energy into work—are closely connected with the structural properties of the cell. The connexion is obvious as regards the transformation of energy, but there also exists a close connexion between speed of respiration and cell-structure. This fact has been strongly brought out by the investigations of the physiologist, Otto

Warburg. I wish to speak to-day of these investigations, in which I myself have taken an active part, in the Heidelberg laboratory and elsewhere.[1]

That there must exist a connexion between the solid stainable structures of the cells, and the velocity of oxidation. and even that respiration is essentially dependent on this structure, can be demonstrated in various ways. I may quote, as an example, the fact that the nucleated red blood corpuscles of birds show a much larger consumption of oxygen than the non-nucleated corpuscles of mammals. Furthermore, the younger blood corpuscles of birds, the protoplasm of which possesses structure which can be strongly stained with methylene-blue, consume more oxygen than the older ones. The result of the following experiment is still more convincing. If the nucleated blood corpuscles of birds be hæmolysed, being first frozen and then thawed out again, respiration does not decrease at all. Through the microscope it can be seen that the nuclei are intact, while the cell membrane is perforated and the hæmoglobin and fluid protoplasm are mixed; if this cytolysed cell suspension be now strongly centrifuged, two layers will be obtained—the upper layer containing the hæmoglobin and the fluid protoplasm, the lower one the solid cell particles, chiefly the nuclei. Respiration takes place entirely in this lower layer. But if the nuclei are disintegrated in a crushing apparatus, respiration ceases completely. (Over ten years ago Warburg carried out these experiments here in England by means of the cell-crushing apparatus designed by Barnard and Hewlett.)

EXPERIMENTS WITH SEA-URCHIN'S EGGS.

Another advance in the analysis of the relations of structure and respiration was made by experiments with sea-urchin's eggs, carried out for the most part by Warburg and myself.[2] If the egg is fertilised or subjected to treatment which produces an experimental parthenogenesis, the consumption of oxygen rapidly increases, as much as eight- or ten-fold, with the development of the fertilisation membrane and the organisation of the differentiating cell substance. (Quite recently Mr. Shearer found an eighty-fold increase during the very first minutes after fertilisation.) The production of carbon dioxide and heat also rises in proportion. Thus, the intake of oxygen in this instance expresses typical respiration. If the sea-urchin's eggs be destroyed by mechanical means, the result is apparently very different from that obtained with erythrocytes. The eggs can very easily be reduced to a shapeless pulp in which not even the outline of an egg is to be seen; this can be done simply by rubbing them with sand or by adding distilled water, or still more thoroughly after removal of their albuminous membrane by strong shaking of the coagulated egg-suspension. If these experiments are tried on non-fertilised eggs, the oxygen consumption does not decrease at all; it even increases a little. If, on the other hand, fertilised eggs be cytolysed, the increase of respiration, produced by the fertilisation, falls off again and the juice of the fertilised eggs now respires exactly as strongly as that of the same quantity of unfertilised eggs. This result, however, does not contradict the result obtained with the blood corpuscles of birds, as it may at first glance appear to do. The cell-pulp of the sea-urchin's eggs no longer shows structures of a coarse kind, but consists for the most part of fine granules. Here, too, it can be shown by centrifuging that the respiration is essentially dependent on these granules. But the cortical layer of the eggs newly formed during fertilisation, and all the coarser structures, disappear on cytolysis. Consequently the increase of the oxygen intake after fertilisation is abolished. Warburg was able to show, in various ways, that the cortical layer of the egg is indeed of special importance in the acceleration of oxidation; for instance, substances which can be proved not to penetrate into the egg, but to work only from the outside—e.g., caustic soda in sea-water—can considerably accelerate the respiration of the egg.

NARCOSIS OF CELL-RESPIRATION.

To leave for the present further investigation of the respiration in the cytolysed eggs of sea-urchins, I will now quote another series of experiments to show how the apparently mysterious influence of structure upon the velocity of oxidation may be interpreted. If respiring cells are put into a solution of an indifferent narcotic, their oxygen consumption will be stopped in a reversible manner. For effective narcotic concentrations we find here the same law as Overton and Hans Meyer had previously found for anæsthesia of the brain of tadpoles—that is to say, the higher members of a homologous series work in much smaller concentration. Their effective power is, therefore, increasingly larger than that of the lower members; this is indicated for Overton's anæsthesia narcosis as well as for the inhibition of respiration according to Warburg.

You all know that Overton and Hans Meyer attempt to explain this phenomenon by the rate of the lipoid solubility of these substances, or, more exactly, by the partition coefficient between the cell lipoid phase and aqueous solution. (Table I.) The higher members

TABLE I.—*Rule of Homologous Series.*

Substance.	Partition coefficient oil/water (Overton).	Stopping of oxidation. Molecular concentration (Warburg).	Critical molecular concentration for narcosis (Overton).
Methyl alcohol ..	2 : ∞	5	0·62
Ethyl alcohol ..	1 : 30	1·6	0·31
Propyl alcohol ..	1 : 8	0·8	0·11
Iso-butyl alcohol ..	∞ : 12	0·4	0·045
Iso-amyl alcohol ..	∞ : 2	0·045	0·023
Heptyl alcohol ..	∞ : 0·15	0·01	—
Octyl alcohol ..	∞ : 0·05	—	0·0004
Acetone	slight : ∞	0·9	0·26
Methyl-ethyl-ketone	∞ : 20	—	0·09
Di-ethyl-ketone ..	∞ : 5	—	0·029
Methyl-prophyl-ketone	∞ : 4	0·17	0·019
Methyl-phenyl-ketone	∞ : 0·3	0·014	0·001

are more soluble in the lipoid phase and reach, therefore, the same concentration in it under smaller external concentrations than the lower members. Warburg and his co-workers, however, proved by a series of convincing experiments that the condensation in the lipoids cannot furnish the explanation for the narcosis of cell respiration—for in this connexion only that single aspect of narcosis is involved. In a determination of the manner in which a narcotic is distributed between the living cell and the surrounding solution, much more of the highly effective narcotics than of the less effective ones, under the same external concentrations, will be found in the cell. In the erythrocytes, for example, seven times as much thymol will be found in the cell as in the same volume of surrounding solution; 0·8 times as much acetone, however, will be found inside the cell as outside. If we now hæmolyse the bird erythrocytes, remove the stromata by centrifugation and determine separately the combination of thymol with the liquid and solid cell particles, the solid particles are found to combine with ten times as much thymol as the liquid particles. Finally, the combination of thymol and other higher narcotics with the solid parts is not noticeably decreased if the stromata are completely freed from lipoids by boiling for a long time in alcohol and ether. Here, therefore, it is only a question of adsorption.[3]

But that this adsorption is, indeed, the cause of the inhibition, and that thereby a new light is thrown upon the oxidation process, can be further demonstrated by more examples. At first the condensation of narcotics in the solid structural elements of the cells runs exactly parallel with their effectiveness. Indeed, the ascertained quality of the narcotics which undeniably explains quantitatively their effect upon the respiration is their power of adsorption. Traube[4] was the first to draw attention to the fact that the

narcotic activity of different alcohols runs parallel with their power to lower the surface tension of water. In this lowering of the surface tension Traube saw the cause of their narcotic effect. That there can, however, be here no direct, but only an indirect connexion, is seen from the fact that the urethanes, or the substituted ureas, lower the surface tension of water considerably less than the degree which corresponds to their narcotic activity; it is rather another expression of the surface activity—the actual power of adsorption on boundary surfaces—which is here displayed. Warburg first recognised this in the precipitation of protein which occurs in the expressed juice of yeast on the addition of narcotics. The degree of precipitation runs exactly parallel with the rate of inhibition of fermentation. (I would add that alcoholic fermentation is influenced by narcotics in the same way as oxygen respiration.) Imagine, now, the fermentation enzyme in Buchner's yeast juice, the zymase, as a highly colloidal protein, and let the fermentation reaction proceed on the surface of this colloid. The inhibitory effect of narcotics can be clearly explained, according to Warburg, by the diminution of the effective surface of the enzyme, which accompanies the precipitation. As I have shown in publications on the narcotic inhibition of ferment processes,[5] we are dealing here with an exaggerated expression of the effect of narcotics. The precipitations are caused by salt, but the proteins are sensitised to aggregation by the presence of the narcotic. In the absence of salt these precipitations do not occur, though a narcotic inhibition of enzymes in the yeast extract can still be shown. Indeed, in a solution of invertase free from protein and, finally, in the case of an inorganic enzyme model, colloidal platinum, I demonstrated similar narcotic inhibitions and the validity of the rule of the homologous series, while no diminution of the number of particles could be shown in the ultramicroscope. In the accompanying chart is shown the

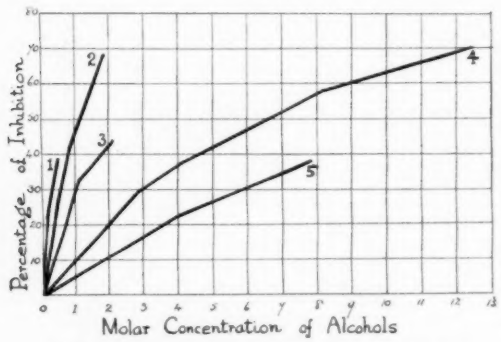

Chart showing inhibition of invertase by alcohols.

inhibiting effects of the invertase action by alcohols. The curves show the typical shape of adsorption curves, slightly concave towards the abscissa axis. For these inhibiting effects I suggested as an interpretation, that the more strongly adsorbed narcotics drive off the substrate from the colloidal enzyme surface, but that the dispersion rate of the enzyme does not thereby undergo any change. This is obviously the case in every reversible narcosis.

Prussic acid also inhibits respiration in a reversible manner even in a molecular concentration of 1/10,000. It is, therefore, considerably more effective than the strongest indifferent narcotics; but it is only slightly adsorbed, and its high activity must be explained in another way. The next thing is, to assume a chemical combination of prussic acid with some substance, present in a minute quantity, but yet essential for respiration, most likely with an oxidation catalyst of the cell. During the experiments with the cell pulp of sea-urchin's eggs our attention was drawn to the iron, which, as is well known, can easily enter into a complex compound with cyanide. The fact could be established that the oxidation of lecithin in presence of ferrous salt, which was discovered by Thunberg,[6] is the chief or initial process of respiration in the egg.[7] Warburg demonstrated this further in an exact analysis of the process, from which I quote only the following points: First, the sea-urchin's eggs contain per 1 g. of cell-substance about 1/500,000 mol. of iron in such a form that it yields a red colour with hydrochloric acid and potassium sulphocyanide. So it exists already in ionic form or is very easily split off as such. Secondly, an addition of iron salt, in quantities corresponding to those existing in the egg, increases the respiration considerably. Very much larger quantities do not produce any stronger effects. On the other hand, additions of the metal much smaller than the quantity present in the egg are ineffective. Thirdly, the increase of oxidation caused by the addition of iron is inhibited in the same way as the normal respiration, by cyanide and narcotics. That it is actually lecithin which is oxidised could also be proved, but I will not enter closely upon this more chemical aspect of the process.

INFLUENCES OF STRUCTURE AND IRON CONTENT IN RESPIRATORY MECHANISM.

How, then, shall we interpret the influence of structure on the one hand and of iron on the other, as coöperating in the mechanism of respiration? The hypothesis lies close at hand that respiration occurs on structural surfaces containing iron, surfaces of macro-heterogeneous, and micro-heterogeneous systems. This hypothesis, that the high velocity of oxidation of the food-stuffs in the cell is based upon a catalysis on surfaces containing iron, has been very recently confirmed by Warburg in a striking manner on a respiration model, Merck's blood-charcoal suspended in aqueous solution.[8]

It is well known that amino-acids in aqueous solution are perfectly stable when exposed to the air. If, however, animal charcoal be added to an amino-acid, the amino-acid is burnt at the temperature of the body in presence of oxygen of the air, without any other addition. It is burnt to the same end-products as in the body—e.g., cystine into carbon dioxide, sulphuric acid, and ammonia. Nitric acid is never formed as in combustion in the Berthelot bomb. Thus, in chemical respects we have obviously before us a process of oxidation very similar in the cell. It takes place on the surface of the charcoal, and is inhibited by indifferent narcotics in exactly the same way as the respiration in living cells.

In Table II. are indicated the first and last members of five homologous series, and in the second column

TABLE II.—*Concentration of Narcotics Necessary to Reduce the Oxidation of Cystine by Charcoal to 40 Per Cent. of its Initial Velocity.*

Substance.	Concentration in solution, mols per litre.	Adsorbed millimols per g. charcoal (x).	Covered area $x\,(V_m)^{2/3}$.
Dimethyl urea (asymm.)	0·03	1·1	9·0
Diethyl urea (symm.)	0·002	0·68	6·9
Phenyl urea	0·0002	0·76	8·2
Acetamide	0·17	1·2	7·3
Valeramide	0·003	0·62	6·9
Acetone	0·073	1·33	8·3
Methyl phenyl ketone	0·0004	0·73	8·0
Ethyl alcohol ..	0·32	—	—
Amyl alcohol ..	0·0015	0·87	7·9
Acetonitril	0·2	1·5	7·7
Valeronitril	0·0021	—	—

the molar concentrations, which inhibit the oxidation rate of cystine by exactly 60 per cent. Here we see the strong decrease of the effective concentrations as we ascend the homologous series, which indicates an enormous increase of the active power in the same

direction. Now Warburg was able to prove that the inhibition is caused by the driving off of the cystine from the surface of the charcoal. If, as in the table, the inhibition amounts to 60 per cent., we also find exactly 60 per cent. of the adsorbed cystine driven off from the charcoal, as is shown by adsorption measurements with and without narcotics. If we now determine the amounts of the various narcotics which are adsorbed by the charcoal, when in each case the oxidation velocity is reduced by a constant amount, we find the values given in the third column. It will be noticed that the quantities adsorbed very nearly agree in millimols per g. charcoal, while the surrounding concentrations differ about a thousandfold. Nevertheless, this agreement is not perfect, as the first members of the homologous series are always adsorbed a little more than the last members before they induce an equal degree of inhibition. But this last trifling deviation disappears completely when we consider that the rate of cystine removal depends obviously upon the area covered by the narcotic on the charcoal. Warburg adopts the suggestion of Langmuir, that the adsorbed substances cover the surface in a monomolecular layer. Starting from this supposition, he calculates the space occupied by each single narcotic on the surface. Since the larger molecules of the higher members need a larger space than the lower ones, the numbers of column 3 here must be multiplied with a factor for the surface covered by each single molecule, and this factor increases with the higher members. If we imagine the molecules of spherical shape and determine directly the molecular volume of each substance, we get the numbers shown in column 4 for the surface covered by each narcotic at a corresponding rate of inhibition. You will see that the number is constant within the limits of experimental accuracy. (V_m = molecular volume, x the number of millimols, so the covered surface is equal to $x\ (V_m)^{2/3}$.)

The charcoal model imitates the inhibition by cyanides as perfectly as the inhibition by narcotics. The oxidation of the cystine is inhibited by n/10,000 to n/100,000 prussic acid, though the prussic acid is only slightly adsorbed. Although, therefore, only a minimum part of the cystine is driven off from the charcoal, its oxidation is, nevertheless, completely stopped. Warburg suggests that the cyanide covers, not the whole surface, but exclusively those parts of the surface containing iron, and that the oxidation of the amino-acid only takes place on these. Indeed, the animal charcoal contains iron, about 5/1,000,000 mol per g., and the cystine oxidation is stopped by 10/1,000,000 mol of cyanide. Therefore both values correspond exactly. But iron is really necessary for the oxidation of the amino-acids. Warburg made from pure benzoic acid a charcoal preparation possessing high adsorption power, but containing only traces of iron. The cystine oxidation on this charcoal was very slight and addition of ferrous salt did not help. If, however, the charcoal was saturated with iron salt and then brought to red heat, the oxidation velocity on this charcoal reached the same value as that of the animal charcoal.

A Special Instance of Surface Catalysis.

The heating made the iron an actual component of the charcoal surface. We may imagine the structure surfaces of the living cells to be, like the charcoal surface, a mosaic of fields with and without iron. It may therefore be considered that an essential cause of the high velocity of reaction of the foodstuffs in the cell is their adsorption on the surfaces of structures containing iron. We are here dealing with a special instance of surface catalysis. Whether this is the only reason of the high velocity of reaction is still undecided. In this connexion it is a peculiar fact that for oxidation on charcoal the amino-acids occupy an especially prominent place among the stable substances. I have recently investigated the behaviour of carbohydrates on the charcoal.[10] Curiously enough, glucose is perfectly stable. On the other hand hexose-phosphoric acid is oxidised in a noticeable amount, although much less than the amino-acids. Fructose is oxidised still less, and lactic acid almost imperceptibly. In whatever way this deviating behaviour of the carbohydrates be explained, it is interesting to note that in this connexion hexose-phosphoric acid proves more easily oxidisable than glucose.

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CASES OF DELAYED AND IMMEDIATE ANAPHYLACTIC SHOCK:

WITH A NOTE ON THE CIRCULATORY PHENOMENA.

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TRUE anaphylactic shock in human beings is of rare occurrence. Notwithstanding the innumerable instances of repeated administration of anti-tetanic, anti-dysenteric, and other sera during the war, it has been generally conceded that cases of serious or fatal anaphylaxis were few and far between. During the whole period 1914–1918 in France the second case here referred to was the only one which came under the notice of one of us (J. A. R.) of a man dangerously ill as the result of the injection of a serum. Neither before nor since that time have we met with any such alarming symptoms during serum treatment, except in the delayed case also described below.

It is recognised that man is less sensitive and less easily sensitised than the experimental animal, and it would seem that hypersensitiveness in the human subject is more likely to be an inborn than an acquired phenomenon, and that most of the recorded fatal cases have occurred in asthmatic subjects. This knowledge, however, does not render it any less important to study and record the occasional cases which occur; for this reason our experience is recounted here in some detail.

CASE 1.—A young woman, aged 23, was admitted into Guy's Hospital under the care of Mr. F. J. Steward on Nov. 5th, 1922, with a "septic" finger. Operations were performed on the 6th, 8th, 10th, and 12th, for spread of infection, amputation of the finger finally becoming necessary. On the 10th 50 c.cm. of antistreptococcal serum were given subcutaneously at the time of operation. Four days later patches of urticaria began to appear, and there was slight evening pyrexia. The local condition after the 12th progressed satisfactorily. At 4.30 A.M. on the 18th, eight days after the serum was given, patient was wakened by breathlessness. She was seen at 5 A.M. by one of us (J. A. R.) and was then sitting up in bed with "asthmatic" type of breathing. The respiration-rate was 30 per minute, expiration was prolonged and wheezing, and she was expectorating small quantities of clear mucoid sputum. Sibilant expiratory rhonchi were audible all over the chest. She was pale, and the pulse-rate was between 110 and 120 per minute. Urticaria was appearing in large patches all over the trunk and limbs; the lips, ears, and eyelids were swollen. The house surgeon, Mr. J. K. Milward, had given her an injection of liquor adrenalin 1/1000, m. 2. Within 20 minutes the asthmatic attack was over, but she felt cold and shivery, the pulse remained quick, and urticaria continued to appear. She was packed round with hot blankets and bottles, and given hot tea and lactose.

She was seen again at 8 A.M. By this time there were no asthmatic symptoms, but urticaria was still troublesome; she had vomited twice, had two actions of the bowels, and was completely pulseless. She complained of feeling "washed out" but, apart from the cutaneous irritation and swelling of the gums, made no other specific complaint; she was mentally alert, and quite rational and calm, though she had before been considerably perturbed by the respiratory distress. At 10 A.M. we saw her together; no pulsation could be detected at the wrist or ankle, or in the carotid or subclavian arteries. The heart was not then, or at any subsequent observation, perceptibly enlarged, and there were no murmurs. The impulse was readily felt, the rate was 120–140 per minute, and the sounds were of good quality. She was not cyanosed. She was warm and the temperature was rising. The capillary tide in the nail-bed was good. The question of further administration of adrenalin was discussed, but we were agreed that, with such a degree of tachycardia, and no such urgent indication as "asthma" now persisting, it would be wiser to avoid the possible overstress to the heart which a sudden rise in the blood pressure might entail. In spite of her apparently alarming condition a good prognosis was given, partly on the general impression of the patient's demeanour, the rising temperature, and the disappearance of the shiveriness of which she had at first complained, and partly on the experience of the other case referred to below. For more than 12 hours no pulse could be felt at the wrist. After 18 and 24 hours the radial pulse still could not be detected with certainty. Vomiting ceased, but the patient had some nausea and felt that she could not take fluids, except in the smallest quantities, for fear that she would be sick. She was pale and thirsty, but had a moist clean tongue, and continued to state that she felt "washed out" and intolerably tired, though she found difficulty in getting to sleep.

Treatment.—She was treated throughout with warmth, small quantities of fluid, brandy and lactose by the mouth, and six-hourly rectal administrations of 1 pint of 6 per cent. glucose. The foot of the bed was raised for a few hours, until she complained of the discomfort of the position. Sleep was secured at night with the aid of an opiate. Twenty-eight hours after the onset of the attack the radial pulse could be felt as a doubtful flicker, but not accurately counted. At the cardiac apex the rate could be readily determined as 120–130 per minute, but the sounds were not so clear as on the previous day. She now complained of acute pain in nearly all her joints. She could not open the mouth wide on account of pain in the temporo-mandibular joints, and the knees, ankles, wrists, and interphalangeal joints were similarly involved. There was no further trouble with urticaria. Asplrin was added to the rectal injections.

Recovery.—Almost abruptly at about 3 P.M. on the 19th, or about 34 hours after the first appearance of urgent symptoms, the pulse became quite good in volume and slower in rate, and from then onwards it improved steadily. By mid-day on the 20th the pulse-rate was recorded as 80 per minute. After a further 48 hours all the joint pains had disappeared, but patient complained of some deep-seated pain in the muscles of the left thigh. After this her progress was uninterrupted, except for the development of a small patch of erythema below the left knee, and later of an abscess, presumed to be metastatic, in the right buttock. On the morning of the 18th, when the "shock" symptoms were at their height, the temperature reached 102° F., but quickly fell again to normal. It rose during the period of the gluteal abscess, and became stable again after its drainage.

The remarkable feature of the case was the very late development of severe shock-like symptoms, true anaphylactic shock being usually considered as an immediate rather than a remote phenomenon. Regarding serum-sickness as the usual anaphylactic response in human subjects, this case might be viewed as an extreme exaggeration of this response, for the symptoms of "serum-shock" and "serum-sickness" were coincident. Indeed, the case suggests the essential unity of the two conditions. The early development of urticaria, on the fourth day, was an indication of hypersensitiveness. The patient was not an asthmatic subject, and there was nothing else in her history to indicate that she was previously sensitive to foreign proteins. She had at the time no recollection of ever having had serum before, but it was later elicited from her mother that she had had diphtheria 19 years previously, and that she was given antitoxin at the time. As there was no history suggesting alarming symptoms on this occasion it would seem reasonable, in spite of the long interval, to regard her as a genuine instance of sensitisation by a previous dose. We discussed the possibility of immediate shock having been averted by reason of the fact that she was under anæsthesia at the time of administration of the anti-streptococcal serum. We are, however, informed by Dr. P. P. Laidlaw that, although anæsthesia may relieve or avert bronchial spasm and so save life in the anaphylactic guinea-pig, it has little effect on similarly induced circulatory shock in dogs. Further, if the anæsthetic had merely delayed the shock it could hardly have done so for so long a period. The symptoms observed in this case were almost identical with those manifested in the following case.

CASE 2.—In October, 1918, a soldier was admitted to a main dressing station with a small wound of the buttock. He was pale, cold, and pulseless; was vomiting and complaining of abdominal pains. So ill did he appear that special examinations were made to ascertain whether he might have an intra-abdominal lesion with hæmorrhage. The wound was carefully probed and found to be quite superficial. He was not aware of having sustained any other injury. Abdominal examination was negative. Within a short while urticaria appeared, and anaphylactic shock could be confidently diagnosed. The man had during his period of service received two previous prophylactic injections of A.T.S., after one of which he admitted to having "felt bad." He was examined probably within an hour or less of receiving the third dose of A.T.S., which had been given the same evening at an advanced dressing station. Mentally he was perfectly clear. He was treated as an ordinary case of surgical shock by warmth, elevation of the feet, and frequent small sips of fluid, but as after two or three hours the pulse was still impalpable he was sent down to a casualty clearing station with a special note. He there came under the observation of Major G. T. Mullally, who later reported that the man had remained pulseless for some hours, but was fit for evacuation to the base on the following day. Asthmatic symptoms were absent, and gastro-intestinal symptoms were the most prominent apart from those of circulatory failure.

In both of the cases described the general impression of the patient's condition, as judged by the mental outlook and behaviour, the heart sounds, and the recovery of body warmth, was that it was less grave than the complete absence of pulse seemed to indicate. It was largely on the experience of the earlier case that a good prognosis was given, and more active treatment withheld in the later one. We have since discussed whether we should have done better in both cases to have given frequent small doses of adrenalin subcutaneously, as the symptoms were indubitably those of an extreme fall in blood pressure, and the rapid cardiac action may have been in response to this fall. At the same time treatment on general and expectant lines was justified by the result in each instance.

Circulatory Phenomena.

The symptoms in both of the cases described suggested a profound fall in the systemic blood pressure of exceptionally long duration. Presumably the main volume of the blood must have accumulated in the splanchnic area. The absence of cyanosis, the rapid recovery and maintenance of superficial warmth, and the presence of a good capillary tide in the nail-bed would seem to exclude a capillary stagnation. There was no unusual loss of fluid by sweating, diarrhœa, diuresis, or vomiting, and the fluid intake was well maintained. The symptoms of circulatory shock persisted long after the disappearance of bronchial, cutaneous, and gastro-intestinal reactions.

At the time of writing we have not been able to find in the literature clinical descriptions of the circulatory phenomena of serum-shock in man. We are not ourselves familiar with any other condition in medicine in which "pulselessness" can persist for so long and yet a good prognosis be given. To the best of our recollection we have seen no other cases showing more than a transient pulselessness recover at all. In both cases there was reason to presume that sensitisation by a previous dose of serum had occurred. The cases emphasise the importance of inquiring of every patient about to be treated by injection of a serum whether he or she has ever before undergone a similar treatment.

THE STANDARD OF CURE IN THE TREATMENT OF GONORRHŒA.

BY W. L. HARNETT, M.B. CAMB., F.R.C.S. ENG.,
MAJOR, I.M.S.

No problem in the treatment of gonorrhœa is beset with such difficulties as that of deciding when a case may be passed as completely cured and when treatment be stopped. The patient usually believes himself to be cured when all symptoms have ceased and the discharge has disappeared, the persistence of a "morning drop" he looks on as of no consequence, and the advice to continue treatment is only too often neglected, until some alcoholic or other excess precipitates the inevitable relapse. By the time this happens, the gonococcus has become so deeply embedded in the many diverticula and adnexa of the urethra that its eradication is tenfold more difficult than it would have been had treatment been continuous. The recognised tests of cure by microscopical and bacteriological examination of the secretions after provocative measures, together with urethroscopic examination, are sufficiently stringent and reliable for practical purposes. The difficulty is that each test must be preceded by an interruption of treatment and, in the event of the result being positive, its resumption for a variable period, followed by a repetition of the test. In the intervals between the tests the surgeon, if there be no gleet or other sign of active disease, is rather in the dark as to what is happening.

What seems to be required is a system of treatment by means of which an accurate record of the progress of the case towards cure may be kept, so that the tests may be applied at the appropriate period, in the hope that one test may prove final. The system to be described was worked out in the venereal department of an Indian general hospital at Constantinople, and has now been in use for some two years, during which time its reliability has been demonstrated by the fact that no case has ever been readmitted for a relapse. Modifications have been introduced from time to time, and increased experience in the use of the urethroscope and other instruments has enabled better results to be obtained. Accurate records of the last 88 cases of acute gonorrhœa have been kept, and these form the basis of the present communication.

Method of Treatment.

The system of treatment is the ordinary one of urethro-vesical irrigation, with prostatic massage and such instrumental treatment as the urethroscope shows to be necessary. Inspection by the latter instrument is the test of cure for the anterior urethra. For the posterior urethra, the polymorphonuclear cells in the expressed secretions of the prostate and vesicles are roughly enumerated at regular intervals and the recorded results enable one to judge the progress of the case. All writers on the subject emphasise the importance of a careful search for gonococci, with resort to cultural investigation if none be seen. Some label a case as cured if no gonococci are thus found, and if the anterior urethra is free from infectivity. Others hold that a large number of pus cells in the mixed secretions should cause a case to be looked on with suspicion, even if no gonococci or other organism be detected. Most say that the presence of a few pus cells in the mixed secretions is of no account if no organisms are present, but are silent as to where the line is to be drawn between the suspicious cases with numerous pus cells and those which may be passed as probably cured. It was in the hope of bridging this gap that the detailed investigation of a series of cases was undertaken.

The method of treatment is as follows:—

1. After thorough examination the case, if the posterior urethra is found to be infected, is placed on urethro-vesical irrigations of potassium permanganate 1–8000, twice daily, administered by an orderly. This latter point is of special importance in dealing with Indian patients, as it would be very difficult to teach them to irrigate themselves. In any case, during the acute stage the necessary distension of the inflamed urethra with fluid is painful and is likely to be more thoroughly carried out if done by another person. For the first 68 cases of the series the routine was to commence with anterior irrigations, changing to posterior irrigations only when the acute symptoms were subsiding. Later this was changed, as it was found that there was a tendency on the part of medical officers carrying out the treatment to delay the change to posterior irrigations much too long. Anterior irrigations are now used only for cases of anterior urethritis, all cases in which the posterior urethra is found to be infected being treated with posterior irrigations from the start. The strength of the lotion used is raised, as rapidly as tolerated, to 1–2000.

2. When the discharge has thinned and the symptoms have subsided, gentle prostatic massage twice weekly is commenced. Irrigations are now given once daily only.

3. When the discharge has ceased except for a "morning drop," the anterior urethra is carefully examined with the urethroscope. Inflamed follicles are cauterised, soft infiltrations dilated with Kollmann's dilator, cystic follicles massaged over Wyndham Powell's penile dilator, or other instrumental treatment instituted as necessary. As long as a "morning drop" is present, daily irrigations are necessary. At about this time irrigations of oxycyanide of mercury, 1–4000 to 1–2000, are substituted for those of potassium permanganate.

4. When the "morning drop" has ceased the daily irrigations are stopped. Treatment now consists of massage of the prostate twice weekly, preceded by an irrigation of oxycyanide of mercury 1–2000, with which the bladder is filled. First the prostate and then the vesicles are massaged, a drop of the combined secretion is caught on a slide and carefully spread with a platinum wire if thin, with the end of a slide if thick. The slide is dried, fixed, and stained with methylene-blue. The patient passes the first portions of the bladder contents into a urine glass; the characters of the threads and plugs, if any, are noted, whether sinking, semi-floating or floating, opaque or semi-transparent, thread or comma-shaped, &c. If in doubt as to their character, a sample should be fished out and examined under the microscope. The stained slide of the mixed secretions is then examined microscopically. The whole slide is first examined under a low power and the portion most crowded with cells is selected. This portion is then examined under a 1/12 in. objective and No. 2 ocular, tube length 160 mm. Should gonococci be detected, daily irrigations of potassium permanganate are resumed, and the examination is repeated a week later. Should the slide show large numbers of other organisms, daily irrigations of oxycyanide are resumed and the examination repeated as before. Should neither of these conditions be found, the number of polymorphonuclear leucocytes in 20 or 30 fields is counted and the average number per field is recorded. Microscopic plugs (which are frequently present when none are visible macroscopically) are included in the count by totalling the number of polymorphs which they contain. Epithelial cells, lymphocytes, and other mononuclear cells are excluded from the count. Prostatic massage twice weekly is continued, and a fortnight later, at the fourth succeeding massage, the count of the secretions is repeated and the result again recorded. The patient in the meantime lives his ordinary life, except that alcohol, sexual indulgence, and such exercises as bicycling and riding are forbidden. At first the cell count will often be found to rise owing to the discontinuance of the irrigations, but later a steady improvement sets in. A reappearance of the "morning drop" or a sudden increase in the cell count is treated by the resumption of daily irrigations for a week or so. Prostatic massage twice weekly with fortnightly cell counts is continued

steadily until, in favourable cases, the urine after the massage contains no purulent plugs, and the slide shows an absence of microscopic plugs and a polymorph count of not more than 1 per field, preferably a good deal less. The patient is then ready for the final test. During successive counts the steady fall in the numbers of polymorphs will have been accompanied by the appearance of mononuclear and epithelial cells (the latter in large numbers indicate that treatment should be stopped for a while) by the reappearance of lecithin bodies, corpora amylacea, spermatozoa, and other constituents of the normal secretions.

5. For the final test all treatment is suspended for a week or ten days, during the last three days the patient takes alcohol regularly. The patient is examined after holding urine for some hours. There should, of course, be no gleety discharge obtainable. The urine after prostatic massage should be clear and any threads or plugs should be mucus only. The slide of the mixed secretions should show no microscopic plugs and the average polymorph count of 20 or 30 fields should not exceed 1 per field. The final examination with the urethroscope is then made and, if negative (as I have invariably found it to be in such cases), the patient is passed as cured.

An average count of 2 polymorphs per field may also be accepted as a probable cure, provided that a repetition of the test a week or two later, during which time no treatment has been administered, gives the same result. The presence of purulent plugs either in the urine or in the slide, or a polymorph count of more than 2 per field, is an indication for further treatment. The average period requisite to reach the above standard has been found to vary from 97 to 137 days, according to whether instrumental treatment is required or not.

A few cases remain in which it is not possible after four months of treatment to bring the patient up to the requisite standard for submitting him to the final tests. The treatment of anterior urethral lesions should be finished by now, and should be followed by instrumental treatment of the posterior urethra. An examination with the posterior urethroscope should first be made to determine whether any gross lesion, such as a polypus, is present. Usually only abnormal congestion of the verumontanum will be seen. A variety of methods of treatment have been tried, and their results judged by the effect on the polymorph counts. Posterior instillations of silver nitrate, dilatation by large sounds followed by prostatic massage, massage with a sound in situ, topical applications

TABLE I.—SUMMARIES OF RECORDS OF 22 CASES OF ACUTE GONORRHŒA TREATED IN ACCORDANCE WITH AUTHOR'S SCHEME.

Serial No.	Duration—days.	Anterior irrigation—days.	Total period of irrigation—days.	Polymorphs in prostate secretion, and day of disease. (p.f. = per field; fs., fields.) 1st test.	2nd test.	3rd test.	4th test.	5th test.	6th test.	7th test.	Final test after alcohol and suspension of treatment—days.
60	7	20	50	++ 41st.	2 p.f., 66th.	1 in 5 fs., 77th.	..	..	..	..	1 in 20 fs., 90th.
61	3 (?)	13	62	+ 62nd.	1 in 2 fs., 87th.	+ 101st.	1 p.f., 117th.	1 in 5 fs., 133rd.	++ 155th, after alcohol.	1 in 10 fs., 168th.	Nil, 176th.
62	4	24	43	1 p.f., 34th.	1 in 20 fs., 45th.	..	..	..	..	..	1 in 5 fs., 53rd.
63	4	18	53	++ 53rd.	2 p.f., 66th.	1 in 10 fs., 70th.	..	..	..	..	1 in 6 fs., 77th.
64	6	12	55	+ 55th.	++ 65th.	+++ 79th.	1 in 3 fs., 89th.	1 in 5 fs., 100th.	..	..	Nil, 107th.
65	7	23	40	++ 31st.	++ 42nd.	++ 63rd.	++ 78th.	+ 84th.	1 in 5 fs., 95th.	..	1 in 10 fs., 102nd.
66	12	29	42	+ 42nd.	1 p.f., 52nd.	2 p.f., 67th.	..	..	..	..	1 in 20 fs., 76th.
67	4	—	11	1 in 2 fs., 11th.	1 p.f., 21st.	1 in 5 fs., 28th.	..	..	..	..	1 in 4 fs., 36th.
68	7	—	56	Abundant, 56th.	++ 76th.	++ 91st.	+ 108th.	2 p.f., 115th.	..	..	1 in 3 fs., 131st.
69	3	—	46	Abundant, 46th.	+ 71st.	+ 81st.	+ 95th.	3 p.f., 113th.	++ 130th, after alcohol.	1 p.f., 142nd.	1 in 2 fs., 148th.
70	7	—	35	+ 60th.	1 p.f., 74th.	Nil, 89th.	..	..	..	..	Nil, 98th.
71	10	—	37	+ 37th.	+ 48th.	+ 62nd.	+ 90th.	1 in 20 fs., 110th.	..	..	Nil, 119th.
72	5	—	65	+ 76th.	+ 89th.	+ 103rd.	+ 120th.	..	..	..	
73	12	—	53	+ 53rd.	+ 64th.	3 p.f., 93rd.	+ 106th.	+ 121st.	1 p.f., 148th.	+ 161st.	1 p.f., 173rd.
74	5	—	74	+ 82nd.	1 p.f., 99th.	..	..	..	..	..	1 p.f., 106th.
75	4	—	31	1 p.f., 31st.	Nil, 41st.	..	..	..	..	..	Nil, 48th.
76	2 (?)	—	70	++ 70th.	+ 88th.	+ 102nd.	+ 115th.	1 p.f., 126th.	..	..	1 p.f., 133rd.
77	7	—	53	+ 67th.	+ 86th.	1 p.f., 99th.	1 in 10 fs., 113th.	..	..	..	2 in 3 fs., 121st.
78	10	—	51	1 p.f., 63rd.	1 p.f., 77th.	2 p.f., 96th.	2 p.f., 110th.	1 p.f., 123rd.	..	..	2 p.f., 127th.
79	20	—	74	+ 90th.	++ 107th.	+++ 121st.	Abundant, 134th.	Abundant, 149th.	++ 170th.	3 p.f., 181st.	2 p.f., 193rd (no alcohol).
80	?	—	71	+ 83rd.	3 p.f., 97th.	2 in 3 fs., 116th.	..	..	..	..	1 in 2 fs., 123rd.
81	5	—	47	1 p.f., 59th.	1 p.f., 73rd.	2 p.f., 87th.	++ 113th.	++ 128th.	3 p.f., 140th.	3 in 2 fs., 159th.	3 in 2 fs., 170th.

REMARKS, COMPLICATIONS, &c.

Case 61: Relapse due to retention cyst of a follicle treated by Kollmann's dilator. *Case 63:* Folliculitis treated by Kollmann's dilator. *Case 64:* Cystic follicle cauterised, 80th day. *Case 65:* Infiltration in bulb dilated (3rd month). *Case 68:* Epididymitis 12th day, subsided by 34th day. *Case 68:* Soft infiltration in bulb dilated (3rd month). *Case 69:* Suppurating Tyson's gland incised. Gonococci in the pus. *Case 70:* Contracted measles, about 40th day. *Case 72:* Treatment unfinished. Invalided for arthritis. Stock vaccine. *Case 73:* Kollmann's posterior dilator applied after 7th test. *Case 74:* Balanitis and phimosis. Circumcised. *Case 76:* Soft infiltration dilated in 3rd month. *Case 79:* Prolonged treatment required for hard infiltration in anterior urethra. Posterior urethra treated with Kollmann's dilator. Developed severe cellulitis of face in 4th month. *Case 80:* Epididymitis.

through Luy's posterior urethroscope, intramine injections, injections of stock gonococcal vaccines and of T.A.B. vaccine both subcutaneous and intravenous (to provoke a strong febrile reaction) have all failed to give consistent results. Some cases have benefited, others have not. Dilatation with Kollmann's posterior urethral dilator, pushed to 40 to 45 Charrière, repeated twice or thrice at intervals of four or five days, has proved the most satisfactory method of treatment. Sometimes a complete cessation of treatment for a fortnight or more will be followed by a spontaneous improvement. Nearly as good results can be obtained in these cases as in the simple cases, but the period of treatment requisite is longer. In the five cases of the present series in which instrumental treatment of the posterior urethra was necessary, the average duration of treatment was 157 days, but in three cases the final tests could not be carried out, as the patients passed from observation.

Table I. gives summaries of the records of 22 out of the 88 cases of acute gonorrhœa treated in accordance with this scheme. All the 88 cases had the posterior urethra infected on admission and gonococci in the discharge, and formed a consecutive series of cases of this character. Cases of anterior urethritis alone, those not showing gonococci, chronic cases, and cases complicated by soft chancre or severe balanitis were not included in the record as, although the same methods were used for these cases, it was considered that they would not furnish a fair test of the efficiency of the treatment. The periods in the column headed "duration" are those given in the patient's statements, which are in many cases quite unreliable; the fact that every case came in with the posterior urethra infected shows how late the cases reached hospital. Concealment of venereal disease in its early stages is only too common amongst Indian troops. The intervals between the records of the prostatic condition do not conform strictly to the scheme laid down above, owing to pressure of work on the medical officer carrying out the treatment. The final test and the one immediately preceding it was, in nearly every case, carried out by me personally.

The notation used in recording the cases is as follows:—

Polymorphs	"abundant"	means	15 and upwards	per field of 1/12 in. objective.
,,	+++	,,	10–15	
,,	++	,,	5–10	
,,	+	,,	1–5	

When the polymorphs are 1, 2, or 3 per field, the exact figure is specified. Similarly with lower figures, 1 in 2 fields, 1 in 5 fields, and so on.

The results of the final tests in this series of cases were as shown in Table II.

TABLE II.

Polymorphs per field.	No. of cases.	Intra-urethral instrumental treatment.		Average duration of treatment in days.
1 or less ..	64 (72·7%)	Not necessary ..	47	97
		Required	17	127
2	10 (11·3%)	Not necessary ..	6	137
		Required	4	129
More than 2	14 (16%)	—		121

The fact that 14 cases finished up with counts of more than 2 per field after treatment for an average period of 121 days only requires explanation. Seven of these cases (Nos. 20, 24, 25, 27, 44, 50, and 72) passed from observation, owing to their units leaving the station. In two cases (Nos. 2 and 4) treatment was discontinued, as the investigation had not then reached the stage of fixing a standard. Two others (Nos. 41 and 42) were discharged in my absence, after treatment for 122 days and 118 days respectively, with counts of + and ++, these cases should have been kept under treatment longer.

In only three cases of the series (Nos. 36, 83, and 88) was treatment abandoned with counts of 3 per field and ++ after five months. A period of cessation of treatment was indicated in all these cases. Owing to unreliability of the history, no relation could be established between the duration of the disease before coming under treatment and the rapidity of cure, though such relation must exist. It will be noticed that in cases in which instrumental treatment of the anterior urethra has to be carried out, the polymorph count often keeps at a high figure whilst this treatment is going on (e.g., Nos. 53, 68, 73, 79, 83). With a focus of inflammation in the anterior urethra, over which the expressed secretions have to pass, the results of the prostatic cell counts are so unreliable, that it is not worth while recording them until the anterior urethral treatment is finished.

A considerable number of chronic cases have been treated on the same lines, but the results are disappointing. The gleet can be caused to disappear and the prostatic count considerably improved, but the standard laid down for cure was rarely attained, though this might be possible after very prolonged treatment. In examining these cases it is not always safe to rely on the results of the first prostatic massage, as the second or third massage may open up occluded foci which escaped the first time, thus causing a rise in the count. Separate examination of prostatic and vesicular secretions is often advisable. The same method may be used as a test of cure in cases where it is desired to ascertain whether an attack of gonorrhœa some time previously has completely cleared up or not. Here, too, it is necessary to remember that the result of the first prostatic massage must be received with caution. Many cases of chronic rheumatism, sciatica, and lumbago have thus been traced to their true cause, and treated in the venereal department with results more satisfactory than those previously obtained by medical treatment.

It may be objected: (1) That the method of making the films is too rough for the examinations to be a reliable index of the state of the prostate and vesicles. Provided that the same observer makes the films each time in the same manner, it is not difficult to secure films of uniform thickness, and the results of the cell counts will be comparable with each other. (2) That the standard of cure laid down is too high. This may be so, but it is a fault on the right side. That standards of cure in general use are not high enough is shown by the enormous numbers of chronic and relapsing cases in the community. (3) That no proof has been brought forward that the cases passed as cured by this standard are really cured. In a few cases cultures of the prostatic secretion were made from cases approaching the standard of cure. The prostate was massaged with the urethroscopic tube in situ and the specimen collected by passing a platinum loop down the tube. In no case was the gonococcus cultivated.

None of the cases dealt with in this communication are known to have relapsed. Had any relapse occurred the case would have been readmitted to the hospital. Several of the cases were seen again two or three months after cessation of treatment, and in all the standard was found to have been maintained. The ordinary Indian ration, on which these patients lived after the acute stage had passed, consists of highly spiced food, the consumption of which acts as a provocative. That such results could be obtained under these conditions speaks well for the method. Taking into consideration the fact that the prostatic secretion normally contains no leucocytes at all or only an occasional one, and that any residual infection of the neighbouring urethra or adnexa is certain to reinfect the prostate, the presumption that the cases which have reached the standard laid down for cure in this paper are really cured is very strong.

I am deeply indebted to Captains D. P. Bhargava, B. T. Krishnan, F. Dhunjibhoy, and W. Valladares, all of the Indian Medical Service, who worked under my direction. It is due to their careful work and accurate records that I am able to bring forward these results.

PSYCHO-THERAPEUTICS.

Opening a Discussion at the Medical Society of London on Feb. 12th, 1923.

BY E. FARQUHAR BUZZARD, M.D. OXF., F.R.C.P. LOND.,
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WHEN your Council honoured me with an invitation to open a discussion on psycho-therapeutics it was not unnatural, perhaps, that I should accept the task without hesitation and without undue dismay. The subject of psycho-therapy, judging from recent literature, is so pregnant of controversy that only gentle stimulation could be required from an introductory address. It was not until the labour of writing was actually begun that I realised the enormity of the self-confidence which had led me to undertake it. The title covered such a huge field of questions which might be discussed, and many of which have been discussed almost ad nauseam, that the difficulty lay in choosing some which had perhaps escaped the attention they deserved and the consideration of which might yet be profitable.

The first questions I asked myself were: How does it come about that we are all so keenly interested in psycho-therapy at the present time? Is this interest an isolated phenomenon, or can it be regarded as part and parcel of a general and gradual change in our attitude towards the science and art of medicine? No one can deny that psycho-therapy is as old as the practice of medicine itself. It would not be an exaggeration even to say that it has been the mainstay of medical practice for centuries and that no medical man has been consistently successful in treating patients who has not, consciously or unconsciously, practised psycho-therapy. Our material ability to cope with disease was, and still is, so limited that were it not for the powerful suggestion supplied by the possession of trained knowledge, the medical profession must long since have gone under in the struggle for existence against quackery.

Growth of Knowledge Concerning Mental Disease.

The possession of knowledge concerning disease is the accumulated product of the work of the last century, when the attention of medical men was centred almost entirely on the investigation and description of mature disease, the picture presented by the patient, dead or alive, with full-grown morbid processes. Everyone was busy collecting and recording and classifying types and examples of disease, and the collector's inherent love of naming and cataloguing became an almost uncontrolled passion. Mental and physical disorders shared the same fate, and little attempt was made by the profession as a whole to understand the technique involved in the production of the pictures as they presented themselves. The amassing of all this information concerning adult disease, valuable and necessary as it was, had in the end the inevitable result of making us realise how impotent we were to cure it at that stage and how imperative it was that embryonic disorders of function should be recognised and arrested if the art of medicine were to progress. Long before this truth had become generally absorbed, and even that ideal has not yet been attained, there were isolated voices crying for its recognition. Many years before the close of the century Hughlings Jackson wrote: "The slightest departures from the standard of mental health are to be studied, and not only the cases of patients who require to be kept in asylums. Indeed, the slightest cases are the more important in a scientific investigation."

It was but a short step from the recognition of the importance of slight departures from the standard of normal health to the appreciation of the necessity for accurate, patient, and detailed history-taking in our search for correct diagnosis and treatment in both mental and physical disorders. Most physicians will agree that the longer they practise the more conscious do they become of the supreme importance of histories in arriving at diagnosis, for while physical examination may often enable us to localise the site of disease, only a careful history will allow us to interpret its pathology. If this is the case in regard to organic disease, is there any reason for supposing that it should be otherwise with those disorders which are described as functional or better still as mental?

So far as I can judge the art of history-taking, in regard to both mental and physical disorders, began to assume its appropriate prominence and to produce the discoveries which might have been expected from it, during the last 10 or 20 years of the nineteenth century. The results have not been disappointing in their relation to diagnosis, prevention, or treatment, but while on their physical side they were such as we were prepared by previous knowledge to accept without much demur, on the mental side they have met with a volume of resistance which only time and education is slowly breaking down.

Resistance Provoked by Disclosure of Sex Complex.

The historical analysis of patients suffering from tabes dorsalis led to the conclusion that the most important ætiological factor in the production of that disease was syphilis. This met with only transient and feeble opposition, because syphilis was already an accepted although distasteful factor in the origin of many morbid conditions. On the other hand, the histological analysis of some mental disorders revealed the prominent part played by sex complexes in their origin, a discovery which provoked violent resistance of a most unscientific kind. And that is the reason why we are still discussing psycho-therapeutics more than other therapeutics in spite of the fact that our interest in the early departures from the standard of normal health is as alive in relation to physical as it is in relation to mental disorders. The distinctive character of the medical profession as opposed to the hordes of healers outside its ranks is, or should be, that diagnosis precedes treatment. If this axiom is accepted it is clear that we must utilise any means which are available in our attempts to arrive at a correct diagnosis.

Value of Psycho-analysis.

Psycho-therapy, like all other measures of treatment, must depend for success on accuracy of diagnosis. In many cases of mental disorder, including neurasthenia, hysteria, phobias, obsessions, and the like, the data necessary for a diagnosis and for subsequent treatment may be arrived at by the taking of a careful history based on the conscious memory of the patient. In other cases this simple method fails and other methods requiring more time and more skill are necessary before the ætiological factors are revealed and a rational form of treatment can be insured. The experiences and insight gained by those who have practised psycho-analysis, to whatever school they may belong, has been of enormous value to the medical profession, and not only to those of us who openly support the scientific value of such inquiries. That the method in unskilful or unscrupulous hands may lead to harmful rather than to beneficial results is a charge which cannot be controverted and which, with equal truth, may be levelled against electro-therapy, vaccine-therapy, and many other therapies under similar conditions. The course of psycho-therapy was promoted more quickly than might otherwise have been the case by the recent war. The experience of treating very large numbers of minor mental disorders quickly established the fact that psycho-therapy was generally successful when all other therapeutics failed. Moreover—and this helped to reconcile some wavering unbelievers—sexual problems as ætiological agencies were brought down from a position of prominence which they were not really entitled to occupy in solitary grandeur.

Before passing on to other considerations may I submit my answers to the two questions with which I began? To take the second first—our interest in psycho-therapy is part of our general interest in treatment based on inquiry into the origins of

disease and so illustrates our increasing desire to employ rational rather than empirical methods. The perhaps undue keenness with which psycho-therapeutics are discussed has been stimulated by the conflict aroused in many minds between scientific inquiry and social or personal prejudices. But if psycho-therapy is to prosper and to maintain the position which is its due we must face quite frankly the difficulties which beset its path. Ultimately its success must depend on the proper education of the public mind in respect to mental disorders, and that education cannot be adequately prosecuted until the medical profession is equipped for the purpose. It cannot be denied that hitherto the newly qualified medical man or woman is very poorly equipped in this respect. His or her attention has been engrossed with organic diseases, and there has been little time to spare for what is "only functional." Little do they recognise at this stage that in practice a predominant portion of their work will concern disorders of function and for the most part perhaps disorders of mental function.

Difficulties in Teaching Psycho-analysis.

There are inherent difficulties in the teaching of psycho-therapy; unlike most forms of treatment it cannot always be practised in the open. The presence of students or graduates is sufficient by itself to abort any inquiry into a patient's mental history, and the teacher of general medicine rarely has the time or opportunity to investigate his hospital patients alone and so to supply concrete examples of his methods. And yet it would be a mistake to divorce the investigation of the physical conditions of a patient from that of his mental state. One would like to see every physician teaching general medicine give some time to the exposition of his views on psychical investigation and psycho-therapy, and at the same time find every general hospital equipped with a department for minor mental disorders. The student may learn much from his teacher's attitude towards so-called functional patients, and might probably spend a few weeks either before or after qualification in a special department.

The importance of this question of education can hardly be exaggerated. The doctor poorly equipped in the psychical aspects of his profession may not only be lacking in the power to help his patients, but may, quite unwittingly, exert a harmful influence on them. A sedulous attention to some unimportant physical abnormality or an attitude of cheery optimism as the only weapon with which to face grave psychical disturbances are equally potent causes in the production of chronic disabilities. If the medical man is able to recognise mental as well as physical suffering when he meets it, and particularly if he can discriminate between those psychical ailments which he has the power and time to alleviate and those which require special treatment and should be handed over to someone else, it is all that can be asked of him. He does this successfully with his surgical patients and there is no reason why he should not follow the same lines with patients suffering from mental disorders. But he must recognise the principle that time and skill are necessary and more fruitful of good results when spent early than when postponed until the disorder has become firmly rooted. There are so many patients who have suffered untold hardships from the advice to go away for a change, take plenty of exercise and lots of fresh air!

The question of time is the second great difficulty in the path of psycho-therapy. Time is the essence of success in the treatment of the neurasthenic and how few doctors can spare it. Complex cases require time and skill, and he who undertakes them must specialise. And here we raise the bogy of specialism. Much as we may deplore the necessity for specialism, however keenly we may scent the danger of a too narrow view in regard to a patient's condition of ill-health, we must recognise that often the skill and time of a specialist provide the only hope for the patient. I am thankful to say that we have many specialists in psycho-therapy who can be trusted to take a broad view of every case and whose training has included ample experience of humanity under other aspects of disease.

Soil and Seed.

So far I have confined myself to the consideration of practical difficulties which are obvious. Let me turn for a moment to dangers which I see ahead and which provide a snare to the unwary. Fascinated, as few can help being, by the kaleidoscopic picture presented by the workings of the human mind in response to innumerable external stimuli, let us not forget that in all probability environment will not explain all the morbid phenomena we observe. There is a tendency in some directions to disregard the soil and to pay attention only to the implanted seed. With me it is a fundamental belief that we are none of us alike from the beginning of things and that, alluring as it is to attempt the classification of human beings into types, it is far safer in the present state of our knowledge to regard each individual patient as himself and to treat him as such. Perhaps in the dim and distant future, when mental hygiene has come into its own, when the mysteries of endocrinology are laid bare, and when the decrees of heredity are capable of being interpreted, we shall each be brought up to the recognition of our individual potentialities and limitations.

Another danger to the progress of knowledge lies in the tendency to dissociate mental mechanisms from what we know of neuro-physiology. The time for correlation is not yet, but we must keep an open mind on this subject, especially in regard to the more automatic reactions of the mind and body. Dr. Hack Tuke, writing in 1894, quotes Laycock, who half a century before insisted that the true explanation of the association of ideas was to be found in the reflex function of the brain. Referring in 1844 to certain morbid mental conditions Laycock wrote: "Their detection is sometimes difficult, because the patient being keenly conscious of his infirmities will conceal them. If, however, by what is termed the association of ideas, the morbid action of vesicular neurine be brought within the current of his thoughts, he becomes utterly powerless to resist it, as much so as the electro-biologised (hypnotised) to resist the suggestions presented to their minds." Although I do not understand much about vesicular neurine there is a hint worth remembering in this buried quotation.

Other Forms of Mental Treatment.

While maintaining that psycho-therapy is the rational and scientific method of dealing with many minor disorders of the mind, it is salutary to remember that patients have obtained relief in the past from other methods of treatment and not to overlook the lesson to be learned from this fact. Rest and isolation alone, or a good holiday, have relieved many patients of mental suffering, showing that the human mind can often work out its own salvation without extraneous help, provided it is not handicapped by fatigue. We can each of us develop an anxiety state overnight which is dispelled by a few hours' sleep. This knowledge should prevent our making the mistake of jumping into psycho-therapy in the case of a patient who is worn out with anxiety and insomnia. Such an error of judgment has been responsible for many failures and tends to discredit the practice of psycho-therapy. Again, we come across many patients who only suffer from an obsession or phobia when they are tired or when their resistance has been undermined by some bodily illness. True, the mental disorder is always lurking in the background ready to spring into activity when the defending forces are spent, and the patient would be more secure and much happier if the enemy were finally vanquished. At the same time these clinical experiences have their value, and go to prove that more than one factor is present in every case of disorder, mental or physical, and that successful treatment must be based on that knowledge.

Scope of Psycho-therapy.

The scope of psycho-therapy is so immense that any attempt at its definition is entirely outside my power or purpose. And yet it would profit us all if we could form an idea of its almost boundless possibilities in some directions and its limitations in others. The former constitute the fields of the specialist who has the patience and skill to unravel what appear to be inextricable tangles in the human mind, and to so readjust conflicting yet component parts that some sort of harmony is restored. The time will come when he will be able to tell us with authority what disorders he can justifiably expect to cure and what lie outside his domain. Probably he is already justified in claiming as his own the field of anxiety states, hysteria, obsessions, phobias, and many tics, but, speaking for myself and probably for others, his views on the efficacy of psycho-therapy in relation to such conditions as spasmodic torticollis and the occupation neuroses would be instructive and interesting. We know, too, that he is often called upon to try his hand with patients suffering from the milder degrees of manic-depressive insanity, and sometimes is asked to tackle epilepsy. These two disorders are mentioned in particular because they serve to illustrate the supreme difficulty underlying any estimation of therapeutic results. In mild cases of manic-depressive insanity one knows from experience that the phase of depression will almost invariably terminate of itself provided the patient is well cared for. Does the psycho-therapeutist claim that he can in any way shorten that phase? Similarly with epilepsy; it is notorious among those who have had a large experience of this disease that any change of treatment, however apparently futile, is often attended by a longer or shorter remission of symptoms. Can psycho-therapy claim more?

Before concluding may I refer briefly to the scope of psycho-therapy in face of organic disease? This is a field which must needs be cultivated by every practitioner of medicine if he is to avoid mortifying failures and the neglect of which is responsible for the prolonged life of quackery. The area covers the whole of internal medicine, but I will take my concrete examples from organic disease of the nervous system. A patient previously active and in good health develops a paralysis of his lower extremities and quite accurately a diagnosis of disseminated sclerosis is made. The inexperienced doctor will shake his head and hint at an incurable and progressive disease of the spinal cord—"Massage may be tried, but is not likely to do much good." Under such auspices it will not do much good and the patient quite naturally seeks the help of an osteopath who rapidly finds a vertebra out of place and promises a cure. While full of hope, and undergoing quite ignorant treatment, the patient makes the recovery which adequate knowledge on the part of his doctor might have foretold and which he could have promoted by legitimate physical and psychical treatment. Another patient develops the characteristic symptoms and physical signs of paralysis agitans. His doctor recognises the condition, and, having some insight into what is passing through the patient's mind, frankly assures him that, although his complaint cannot be cured, it does not lead to the horrors which are associated with the name paralysis nor to any impairment of his mental faculties. It will make him slow and less active, but if he makes up his mind to ignore this he will be surprised to find how little the disease will interfere with his enjoyment of life. If, on the other hand, he seeks cures from massage, from electricity, from osteopathy, or from Coué he will only encounter one disappointment after another and hopeless mental depression will be superadded to physical disability. May I submit that these examples illustrate the psycho-therapy which we may all aspire to practise, and further they demonstrate that psycho-therapy depends for its success not always on deep psychological learning, but inevitably on the ability to understand human nature combined with knowledge and experience of the natural history of disease.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

A MEETING of this section was held on Feb. 7th, Mr. JAMES BERRY, the President, in the chair.

Mr. G. GREY TURNER read a paper on

PARTIAL HEPATECTOMY.

He described a case in which a sessile adenoma weighing 2 lb. 2 oz. was successfully removed from the liver by incisions extending far back into the liver substance. The patient was a boy, aged 13 years, admitted to the Newcastle-upon-Tyne Royal Victoria Infirmary on Feb. 27th, 1921, complaining of a lump in the right side of the abdomen, first noticed after an attack of pain ten days previously. His general health up till that time had been excellent; there had been no vomiting; bowels were regular, and stools normal. There were no urinary symptoms. Examination revealed a large lobulated mass in the right side of the abdomen, visible as well as palpable, extending from just below the costal margin to near the middle line, and as low as the umbilicus. There was dullness on percussion continuous with that of the liver in front and of the kidney behind. The mass was not tender and there was no ascites. The urine contained a trace of albumin. Exploratory operation with a diagnosis of renal sarcoma was decided upon. At operation a large lobulated tumour arising from the right lobe of the liver was found. The tumour had not the appearance of a gumma and was thought to be a tumour of a simple nature. A frozen section was reported to show a tumour of liver cells "possibly not very malignant"; careful examination showed that its removal by a V-shaped resection of liver, with the gall-bladder in the wedge, with its apex at the cystic duct was possible, and this operation was performed. After ligation of the cystic duct and vessels a light stomach clamp was applied to the tumour side of the proposed incision. A series of interlocking sutures of thick catgut were then passed deeply into the liver substance parallel to and on the proximal side of the proposed incision and tied. An incision was made on one side of the tumour and branches of the hepatic artery caught and tied, venous oozing being controlled by pressure. A similar proceeding on the other side of the tumour enabled it to be removed. The edges of the wound in the viscus were approximated by four interrupted catgut sutures which included the hæmostatic rows of sutures. Some oozing from the under surface of the liver posteriorly persisted; some gauze was packed over this area, a rubber drainage-tube passed to the stump of the cystic duct, a strand of rubber tissue left to protect the hollow viscera from the gauze packing, and the abdomen closed, whilst 10 oz. of gum saline solution were infused intravenously. The patient made a good recovery.

Pathology.

The mass removed, which weighed 46 oz. (the normal weight of the liver in a boy of this age being about 40 oz.), contained a growth of a pale yellowish-green colour with hæmorrhagic staining in places. The surface was divided by deep furrows into lobules. The tumour appeared to be invading the liver substance, although there was a line of demarcation plainly visible. A summary of the microscopic examination by Dr. A. F. Bernard Shaw was as follows: "The appearances here are those of a true liver-cell tumour of unusual type. While the tumour cells are obviously of a hepatic origin, they are atypical in structure and arrangement. There is evidence of both direct and mitotic division, and multi-nucleated forms are seen. Though the tumour cells are actively secreting bile—no bile-ducts are found in the substance of the growth. No evidence of tumour cell emboli was seen. Sections of the lymph gland, obtained from near the gall-bladder, show no metastases. On

the whole the appearances point to an unusual type of hepatic adenoma in which, however, the cells are unusually aberrant.

After-history.—On Oct. 28th, 1921, the boy was very well. In January, 1923, 22 months after operation, he was in excellent health and hepatic function tests by Dr. George Clark indicated a normal function.

Mr. Grey Turner described other cases in which he had resected considerable portions of liver substance with encouraging results.

Indications for Partial Hepatectomy.

The indications for partial hepatectomy were comparatively few. The speaker's experience led him to believe that when malignant disease of the gall-bladder was recognisable by the naked eye no operative procedure would be curative; and partial hepatectomy was, in his opinion, unjustifiable in an operation which was merely palliative. Direct extension of a malignant growth of the stomach or colon was, he thought, an occasional indication when the tumour was otherwise operable. A tongue-shaped portion of liver bearing a hydatid or simple cyst invited excision, but partial hepatectomy was inadvisable as a routine operation for hydatid cyst in the ordinary case. Angiomata, solitary adenomata, and localised primary (and occasionally secondary) tumours of malignant nature might be dealt with in this way when the local conditions were such as to permit clean excision. Granulomata, and especially gummata, had been frequently excised under the mistaken belief that they were malignant. Gummata would be recognised by the naked eye; they were smaller than malignant nodules, their surface rounder and not umbilicated. Riedl's lobe had been excised, but this was rarely justifiable.

Methods of Controlling Hæmorrhage During Operations on the Liver.

Formerly the only method available was the extra-peritoneal treatment of the stump when the mass removed was sufficiently pedunculated. This plan should not be despised, although the ideal plan was to carry out the resection and repair of the liver followed by complete closure of the abdominal wound. Hæmorrhage during the liver incision might be temporarily controlled by several methods, compression of the vessels in the free edge of the lesser omentum either by the fingers or a clamp, or by manual compression of the liver substance on either side of the incision by an assistant. Clamps might also be used, but often crushed the liver tissue severely. An elastic ligature such as a piece of rubber tubing passed deeply through the liver tissue by means of a suitable introducer and tied in such a way as to control the vessels to the area to be incised might also be employed, but this method interfered with subsequent suture. Lastly, the thermo-cautery might be used for making the incision, as in Keen's case. For the permanent arrest of hæmorrhage the branches of the hepatic artery should be caught and tied and large venous channels, surrounded by a purse-string suture, carefully tightened and tied. Apposition of the raw surfaces would control any further oozing. Suture of the liver was difficult owing to its friability. Mr. Grey Turner's method was a modification of that described by Van Buren Knott (*Annals of Surgery*, November, 1917) with the advantage that no special instrument was needed for the introduction of the hæmostatic stitches. Incisions in the liver must not encroach upon the hilum. Occasionally, it might be necessary to employ a gauze pack to stay oozing. In all cases drainage should be provided for, lest there be a bile leakage. In dealing with angiomata great care must be taken to cut wide of the tumour and to avoid puncture of them.

Partial Hepatectomy for Primary Carcinoma.

Mr. GARNETT WRIGHT described the case of a man of 60 years, whom he saw on June 21st, 1920. He had been ill for six weeks, and had suffered from pains in the upper abdomen shooting through the back and to the right shoulder; a lump had developed. He had had increasing constipation for some months, and occasional passage of bright-red blood, but had passed no mucus and had had no diarrhœa. On examination a large non-fluctuating oval mass was found on the right side of the umbilicus reaching to the costal margin. It moved freely with respiration, and on percussion was dull. The dullness was continuous with the liver dullness. Operation was performed on July 8th, 1920, when a large non-pedunculated spherical tumour was found deeply embedded in the right lobe of the liver. The gall-bladder was stretched over the left margin of the growth, which was the size of a Jaffa orange. There was a small secondary nodule in the liver substance, but no other growths were discovered. Mr. Wright considered that the mass was a primary carcinoma of the liver and decided to remove it. He first divided the cystic duct, as it was necessary to remove the gall-bladder, which adhered closely to the growth. An assistant controlled hæmorrhage by pressure of hot swabs, and when the growth had been removed all large veins and arteries were caught and ligatured. It was impossible to close the gap in the liver by mass sutures; the wound was therefore packed with gauze and the abdominal wall closed. The packing was removed after three days and the patient made a good recovery except for an attack of double glaucoma, for which iridectomy was performed. He was in good health at present.

Pathology.—The specimen when hardened showed a well-encapsuled tumour, with a varied appearance, being bile-stained in places, and showing hæmorrhages and degenerations in others. The tumour was examined microscopically by Prof. H. R. Dean and recently by Dr. B. J. Ryrie and Prof. J. Shaw Dunn. They all considered it to be a primary carcinoma of liver cells. Mr. Wright said that the technique of partial resection of the liver had been chiefly concerned with the control of hæmorrhage, and various methods had been adopted to isolate the operation area. Large tumours could be removed by cutting boldly through the liver substance, bleeding being controlled by pressure with a hot swab, and the vessels subsequently ligatured. The cut surface of the liver should then be drawn together by deep sutures if possible. If not, then resort should be made to packing.

Discussion.

Mr. C. H. S. FRANKAU when operating in 1913 upon a case of malignant gall-bladder disease with extension to the liver had resected a considerable portion of liver. The hæmorrhage during the incision was controlled with manual compression by an assistant, and afterwards stopped by gauze pressure. An attempt to close the gap in the liver by mattress sutures failed as the sutures cut out. He therefore brought a piece of omentum through the wound in the liver and sutured the liver through this. These stitches were found to hold. The portion of omentum used was then detached from the remainder and the abdomen closed.

Mr. PHILIP TURNER had operated on a female patient aged 29 years exhibiting signs of severe intra-abdominal hæmorrhage upon a doubtful diagnosis of a ruptured ectopic gestation as there was no history of menstrual irregularity. The abdomen was found to be full of blood, which came from a rent three inches long in a tumour the size of a cocoanut arising from the under surface of the liver. Attempts to suture the rupture failed. He therefore excised the whole tumour through a construction at its base by means of the Pacquelin cautery. The patient, who was in a state of collapse upon admission, died shortly after operation. The tumour was reported to be an adenoma, but had very large blood spaces, from which he thought it probable that hæmorrhage had occurred first into the substance of the tumour, thus causing its rupture and the severe intra-abdominal hæmorrhage.

Mr. A. J. WALTON had performed a large resection of the liver upon three occasions for extension to the liver of carcinoma of the gall-bladder. The operation

was quite a simple one, but he was now inclined to doubt whether it was justifiable for that condition, since all three of his patients had died; one of a cardiac condition shortly after operation, and the others more remotely from secondary deposits. Hæmorrhage during incision was controlled by the hands of an assistant, and the raw surfaces subsequently brought together by a simple form of mattress suture combined with a suture through the upper aspect of the liver, which included the two loops of the mattress suture when tied. He had not experienced any difficulty owing to sutures cutting out, as he employed thick catgut and was careful to obtain a good grip of the capsule with each stitch. This form of suture by procuring good apposition of the raw surfaces had rendered the ligature of individual vessels unnecessary.

Mr. FRANK KIDD in July, 1911, had found at operation a tumour of the liver in a case hastily diagnosed in the early morning as one of appendix abscess. He excised the tumour and closed the wound in the liver, employing a form of suture resembling that described by Mr. Grey Turner. The tumour, which to the naked eye resembled a Grawitz's tumour, was reported to be an adenoma of the liver.

Mr. H. S. SOUTTAR in January, 1921, operated on a male patient, aged 45 years, who had a lump in the epigastrium, with a four months' history of epigastric pain and loss of weight. A diagnosis of carcinoma of the stomach would have been made but for the high HCl content of the gastric juice. Exploratory operation revealed a tumour of the liver, and portion of this removed at the time was reported to show the structure of a granuloma. A second operation was performed later in which a portion of liver was removed with part of the stomach and the first part of the duodenum. Hæmorrhage from the liver was controlled by manual pressure by an assistant, and the raw surfaces brought together easily by sutures of kangaroo tendon which exhibited no tendency to cut out. The patient continued to go down hill and died in June, 1921. A re-survey of the tumour made it clear that it was either a lympho-sarcoma or an encephaloid carcinoma.

Mr. C. A. R. NITCH operating in 1910 upon a female patient, aged 54 years, for a supposed carcinoma of the cæcum, found a yellowish tumour of a lingual lobe of the liver apparently primary. He resected the lingual lobe, using a Doyen's clamp to control the hæmorrhage and mattress sutures passed with a flat-eyed probe to close the liver wound. The patient lived for two years after the operation, and then died of recurrence of what proved to be a carcinoma of an adrenal rest.

Mr. J. E. ADAMS suggested the possibility of using a muscle graft for the control of hæmorrhage from the liver.

The PRESIDENT remarked that all the cases described had been rare and interesting. No opportunity to resect a portion of the liver had occurred in his practice until a few weeks ago when he encountered a tumour of the liver the size of an orange, apparently primary, with a number of secondary growths round it. He had not attempted its removal and still thought, after hearing the cases which had been reported at the meeting, that his case was truly inoperable. He pointed out that the anterior margin of the liver was much less vascular in the region near the hilus. In the latter situation a small rupture had in one case caused a fatal hæmorrhage.

Mr. GREY TURNER, in reply, said that the operation in his first case had been truly formidable, the apex of the wedge being within one inch of the hilus. Mr. Frankau's method of suture of the liver was very ingenious; the triangular ligament or a graft of fascia from the rectus sheath might be employed for the same purpose. Mr. Philip Turner's case was one where he thought the extra-peritoneal treatment of the stump might have been suitable.

Mr. GARNETT WRIGHT, also in reply, said that the deeper portion of the tumour which approached the hilus had in his case been shelled out.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this Society was held at 11, Chandos-street, London, W., on Jan. 26th, with Dr. DAVID WATSON, the President, in the chair.

Dr. D. VINRACE showed a male patient who contracted syphilis 30 years ago. For about 20 years he had been suffering from

Leucoplakia Affecting the Palate.

Until about two months ago the condition had remained stationary for seven to eight years. The lesion has at times responded to local treatment, but repeatedly recurred. On the left side of the tongue there was the scar of a tertiary lesion. Recently the leucoplakia had increased to such an extent that it now involved an area of the size of a five-shilling piece. The W.R. always showed a negative result, a fact which the exhibitor attributed to the test not being very reliable in tertiary syphilis. Dr. Vinrace regarded the case as being one of interest because it demonstrated how a patient can for years suffer from a condition of leucoplakia and yet be unconscious of any trouble.

Major G. PETIT said he had seen that day a case with periostitis on the shin, also nodes on the shin, there being a positive history of syphilis. Very little treatment produced a negative W.R. The case was positive to Stern, and to Dreyer's Sigma unit test. If Dr. Vinrace wished, he would be pleased to apply the latter test to this case. Tongue lesions due to syphilis were notorious for giving a negative W.R.—Dr. H. C. G. SEMON said that in his experience of these intractable cases of leucoplakia of tongue and buccal mucous membrane, the removal of carious teeth was almost invariably followed by success, even without further anti-syphilitic treatment. The present patient had many septic teeth and bad stumps. At the Royal Northern Hospital the routine treatment in such cases was to remove all septic stumps before starting anti-syphilitic treatment.—Dr. VINRACE stated that he gladly accepted Major Petit's offer. In spite of the negative W.R. he had treated the patient for syphilis. He expressed himself as being dentally conservative, but would see that the bad stumps and defective teeth of his patient were attended to.

Dr. H. C. G. SEMON exhibited a case of

Psoriasis with a Positive W.R.

The original diagnosis in 1917 in this case, of a man now aged 31, had been ringworm of the scalp. The X rays applied for the supposed ringworm resulted in a severe burn. In 1919 a ringed eruption on the body led to the diagnosis as syphilis, and the W.R. was positive. At this stage the case was referred to Dr. Semon, who diagnosed the eruption as a common ringed psoriasis of the trunk. The W.R., however, was strongly positive. Dr. Semon treated the psoriasis locally with chrysarobin and it was already much improved, and on the blood report he gave the man one injection of a new arsenobenzol preparation intramuscularly. The point he would like discussed was whether a case of psoriasis giving a strongly positive W.R. must be regarded as syphilis. This man had never had syphilis and even declared he had never run the risk of infection, and there was no suggestion of congenital syphilis; 18 per cent. of cases of psoriasis were said to give a positive blood reaction to W.R. Dr. Semon was inclined to treat the case as one of simple psoriasis, and in confirmation of that diagnosis he had on one or two finger-nails remarked the pitting, which was, in his opinion, absolutely diagnostic of psoriasis.

Dr. F. FOWLER WARD described a similar case of a man with a well-marked annular psoriasis, who gave a positive W.R. He was treated for some time as a syphilitic patient without effect. Under salicylic acid and eucaine the psoriasis disappeared in a few months. —Colonel L. W. HARRISON said he had once come across a case of psoriasis which gave a positive W.R.,

but no clinical signs or history of syphilis. The test, moreover, was not at that time carried out with such delicacy as to-day. During the war a number of cases which clinically were psoriasis were sent to Rochester Row for treatment, because of a positive W.R., but all except one gave a negative or indefinite W.R. on admission. The exception was sent by Dr. Whitfield for confirmation of his opinion that the case was one of ordinary psoriasis, though the W.R. was positive. Colonel Harrison and his colleagues at Rochester Row were agreed that there were no signs of syphilis, though the W.R. was strongly positive. It must be concluded that every now and then a case of psoriasis was met with which gave so strongly positive a reaction that it was misleading. In regard to the present case there might, of course, be coincident syphilis.—Dr. SEMON did not propose to continue anti-syphilitic treatment since he considered the pits in the nails pathognomonic of psoriasis.

Dr. MARGARET RORKE introduced a discussion on

Vulvo-Vaginitis.

Having stated that the various types met with afforded varying problems as to prognosis and treatment, Dr. Rorke proceeded to classify the various cases, as follows: 1. In single women: (*a*) Gonococcal vulvo-vaginitis associated with small tight vagina and sometimes with intact hymen. Treatment was difficult and discouraging owing to recrudescence after each menstrual period. (*b*) Non-gonococcal mixed infections: staphylococcal and diphtheroid were often slow to clear; generous local treatment, mixed vaccines, diathermy could be tried; sometimes dilatation and packing were needed. 2. In married women old-standing discharges with very few symptoms were often recognised only after many years as gonococcal. These were tedious to treat. 3. In pregnant women: (*a*) Gonococcal infections varied in intensity greatly, from very slight indeed to very severe distress, with pouring discharge and excoriation; sometimes there was extensive warty involvement of vulva and vagina. (*b*) Pyogenic infections: These were sometimes due to an old endometritis. Symptoms of discharge and discomfort were much more marked when a pregnancy supervened. In primægravidæ sometimes the infection was due to erosion on the cervix with secondary vaginitis from excessive sexual trauma. These cleared easily with simple antiseptics and removal of cause. (*c*) Discharge of syphilitic origin: This very important cause was not fully recognised. In a considerable number of cases purulent discharges complicating pregnancy had no other signs of syphilis, save that the pregnancy is usually small and feeble for its supposed duration. When corroborated by a strongly positive W.R. test the condition was beyond doubt, but in a few cases the W.R. was negative. In these latter, if discharge did not clear on ordinary treatment and pregnancy continued feeble, one was justified in giving anti-syphilitic treatment. In several cases the diagnosis had been confirmed by birth of child showing slight evidence of congenital syphilis, a strong W.R. being found only after delivery. 4. Vulvo-vaginitis of gonorrhœal origin in children. This was best treated by persistent daily vaginal douches by clinic nurses, followed by insertion of acriflavine pencils. Unless systematically treated these cases tended to hang on for months.

Dr. D. N. NABARRO said that in young children vulvo-vaginitis was a fairly common condition. In 1918 they had at Great Ormond-street Hospital 85 cases, in 1919 103, in 1920 111. During five years he had investigated 535 cases, and of them he found 128 were positive to the gonococcus—i.e., 24 per cent. That was more than he had expected. In children one could often hazard the diagnosis of a gonococcal infection from the greenish appearance of the discharge. A large majority of the non-gonococcal cases were due to dirt and to intestinal organisms. The tight clothes the children wore became soiled with the excreta. One saw girls aged 10 with "whites," in which diphtheroid organisms were present, almost in pure form. As to the age of incidence it was an interesting matter: two were in children of a year or under; eight were from 1 year to 18 months old; 11 of 1½ to 2 years. Half the total cases occurred at the age of 4 years or under. That was a surprise to him, as he had thought cases under 2 years of age were certain not to be gonococcal. With regard to the infectivity of the gonococcal cases, other sufferers in a family were frequently found. Some of the cases appeared to be very intractable, others became negative fairly quickly. Some cases were doubtful bacteriologically; possibly the complement-fixation test might be a help in diagnosing these cases.

Dr. A. G. SIMMINS said that at Great Ormond-street Children's Hospital they had to treat the cases entirely as out-patients. He found under douching once or twice daily by the mother, or by the district nurse, the duration of the positive swabs in gonococcal cases was three months; some cases, however, extended to 15 months. On the average, the children had been examined for six or seven months afterwards; but they tried to keep touch with them for several years. At present they were using pessaries of acriflavine specially made for children. Swabs were taken once a fortnight. Of five cases recently treated with chloramine T and pessaries, the average age had been four and two-thirds years, with positive swabs persisting just under two months. So far, these cases had only been observed during two months. In some of the children gonococcus had been found in the discharge at the end of 1 year and 15 months. Sometimes gonococci were only seen present for a week, and though the child was observed for two months afterwards, they never seemed to reappear. In the gonococcal cases the treatment was continued for about six months, the quantity gradually diminishing. The most stubborn cases were those so-called diphtheroid cases, occurring in older girls, and he would be glad of hints as to how to deal with these. Apparently the cases resembled those occurring in older and unmarried women. Had any member tried douching these or injecting glucose or other substance? In gonococcal cases the essential part of the treatment was the douching; in most cases that was all which was required, provided it could be carried out effectively. A centre was needed for these cases with a sufficient staff to carry out proper douching with the requisite frequency. At such a centre the family history could be taken and investigated, sisters and brothers examined, and the source of infection traced.

Dr. A. C. ROXBURGH said that comparatively few of these cases were seen at St. Bartholomew's Hospital. In 1920, when he analysed the statistics, the shortest case lasted 65 days under treatment, the longest 217 days, the average being 125 days. They were treated by irrigation of the vagina, by a nurse, twice a week, and painting the vagina with flavine in normal saline twice a week. Under that treatment most of them did well. In the majority of cases at St. Bartholomew's Hospital the urethra was not affected, and he had not found the cervix affected in a young child. It was comforting to know that a German worker had examined many cases who had had vulvo-vaginitis in early childhood, and in no case did he find gonococci, cervicitis, nor other ill-results of the early infection.

Major PETIT said that for male cases of gonococcal infection at Rochester Row they were at present giving acriflavine hypodermically. They had started giving it intravenously, working up to 350 c.cm. of a 1 in 1000 solution in normal saline. They had given it in saline solution up to a dilution of 1 in 25 hypodermically to mice and rabbits without ill-effect. When the dilution was more concentrated than this the animals died. The cause of death was probably poisoning by acid. It was then found that the pH value of a 1 in 15 solution of acriflavine was approximately equal to that of pure hydrochloric acid. The solution of acriflavine was then neutralised and given hypodermically in a strength of 1 in 10 without ill-effect. A colleague was at the present time working on a sodium salt of acriflavine, and had tried a bismuth salt, but the difficulty was to get it dissolved. To date they had had 64 cases, and on the average the gonococcus disappeared

in 24 days, in some cases in two days. Some of the cases were early infections, others had been very chronic; none had relapsed.

Colonel HARRISON said that Dr. Rorke's paper disclosed valuable and conscientious work in the interests of the national health. He had been interested in the good reports following regular douching. Latterly he had felt that in gonococcal infections something in addition to vaccines was required, possibly something to improve the phagocytic production and activity. He had been fortified in that impression by the excellent results they at St. Thomas's Hospital had had in the treatment of gonococcal infections by combining the specific vaccine treatment with injections of non-specific substances into the circulation. Some had secured results by injecting turpentine, milk, and other substances; they had also employed electrargol intravenously.

The PRESIDENT said that traumatism due to sexual intercourse during pregnancy was a point which ought to receive more attention. At the Glasgow Lock Hospital they had had many cases of vulvo-vaginitis in children to deal with; the condition was difficult to treat satisfactorily. He laid great stress on the method by which smears were taken. In his clinic the specimens were all taken by means of a wool-wrapped probe, not a platinum loop, and were taken not from the vulva, but from the vagina. When gonococcal vulvitis was present vaginitis was also present almost invariably. In Glasgow they kept their patients as in-patients until they were free from gonococci, after which they were kept under observation as out-patients. On the average their stay in hospital was between two and three months. A treatment which was now giving somewhat better results was that described by Dr. Simmins.

Dr. RORKE, in reply, said they had not done the complement-fixation test for children; it had not given very satisfactory results on older patients, except where there was some other definite lesion, such as double tubes or joints. She fully agreed that constant irrigation of the cases under discussion was necessary. For some time she had not felt quite certain as to its usefulness. But she checked the treatment in the case of two girls aged 7 and 8, sisters, both having become infected from the mother. She treated one of them with long-continued douching, which was done by one of the nurses at the clinic, and the other she treated herself by painting with a 10 per cent. mercuric preparation and giving acriflavine pencils. The child being douched romped ahead of the other, and was well in half the time. As to the difficulty of knowing where the patients got the infection, it was difficult for even experienced doctors to realise the conditions of the home life of many of the people whose children attended these clinics. She was constantly receiving fresh surprises. For example, she asked a girl whether she slept alone, and she replied that she slept with the two little children of the friend with whom she lodged. Asked whether she had a towel of her own, she replied that she had not, that they all used one towel. It was surely not surprising that infection spread under such circumstances.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING of this institution was held on Feb. 1st, Prof. E. E. GLYNN being in the chair.

Mr. G. P. NEWBOLT read a note on

Myeloma of the Ischium Treated by Gouging and Radium.

Mr. Newbolt described a case of myeloma involving the tuber ischii and extending upwards towards the acetabulum and forwards along the ramus towards the pubes. The patient was a male, aged 47. X ray photographs showed the extent of the disease. At the operation the growth was freely gouged out. A few days later a tube containing 105 mg. of radium was left in the main cavity for 24 hours and in the cavity of the ramus for a second 24 hours. Four years had passed and the patient remained quite well.

Dr. C. THURSTAN HOLLAND showed X ray photographs which he had taken of the condition before and after operation. He described the bone changes characteristic of the condition.

Mr. R. E. KELLY and Dr. W. J. DILLING read a note on a

Case of Ergotism with Gangrene of the Toes.

It occurred in a patient of 42, a Polish Jew, who had used rye bread for many years. Dr. Dilling tested the bread and flour from which it was made and found evidence of infection by the ergot of rye. Dr. Dilling detailed his pharmacological examinations. He discussed the life-history of *Claviceps purpurea* in cereals and grasses grown on damp clayey soils during wet seasons. The chief symptoms of convulsive and gangrenous ergotism were mentioned, and the possibility of mild cases being diagnosed as gastro-enteritis was pointed out. Tabular statements showed the rapid loss of toxicity in ergot on keeping and the adulteration (1 per cent. to 10 per cent.) in various epidemics. Cases showing difference in susceptibility of individuals, even in the same family, and an instance of 0·2 g. ergot per day causing gangrene were quoted. In the present case the evidence in favour of regarding it as an instance of gangrenous ergotism was as follows: 1. The man ate exclusively rye bread, in which mycelial tissue was found microscopically, and extracts representing 46 g. and 88 g. bread produced distinct cyanosis of a cock's comb; rye from the mill contained 0·1 per cent. sclerotia and the rye grains were also partially infected; an extract of the ergot caused tonic contractions of an isolated virgin guinea-pig uterus. 2. His two attacks occurred in succeeding Novembers, when the ergot of the previous harvests would still be toxic. 3. There was no hæmorrhage on removing the toe. 4. His age, the absence of general arterio-sclerosis and of extension of the gangrene. As no further instances could be traced the case must be regarded as one of idiosyncrasy.

Mr. G. C. E. SIMPSON read a paper on the

Surgical Aspects of Tuberculosis of the Abdominal Lymphatic Glands.

He discussed the acute complications of this condition which usually brought the case to the hands of the surgeon. These included general and local tuberculous peritonitis following rupture of glands, abscess, acute obstruction by bands or adhesions, intussusception, rupture into the bowel, and erosion of the mesenteric artery. He considered cases complicated by acute and chronic appendicitis, chronic obstruction with serious gastric sequelæ, and tuberculous infection of the bowel. Enlarged glands might lead to strangulated hernia either by mechanical obstruction or by causing acute tuberculous peritonitis and leading to œdema and adhesion. Mr. Simpson discussed the symptoms associated with tuberculosis of one or a few groups of abdominal lymphatic glands apart from complications, and quoted a case of hæmaturia cured by removal of a large calcified gland, alluding to Thomson-Walker's work—three cases of hæmatemesis, cured apparently by removal of calcified glands; a case of chronic constipation apparently due to tuberculous glands along the vessels of the colon cured by resection of glands and ascending colon en masse; and in another case resection of the same with three feet of the terminal ileum. A number of cases with recurrent abdominal pains where no causative lesion other than tuberculous glands were found, and which improved after resection were related. The complicated nature of the operation in the later stages and the high frequency of serious complications led Mr. Simpson to plead for earlier surgical attack on the glands. The operation in such cases either of enucleation, or of resection of glands and involved intestine was safe and called only for patience. Mr. Simpson quoted 57 cases; about equal numbers showed acute complications, chronic complications, and no complications. Twelve cases were over 30 years of age, 12 under 10 years, 21 between 10 and 15 years, and 12 between 20 and 30 years.

Removal of glands was done in 43 cases and of these 15 showed no recurrence; 3 have not been traced. Two show signs of abdominal tuberculosis. In one case short-circuit and scraping out of a large abscess was done in March, 1920, and the man is still at work, but has ascites. Three cases have phthisis; two have died. In 14 cases in which removal was not attempted, two died, two have phthisis, and eight are cured. On these results he based the following conclusions: 1. That, guided by the condition of the patient, operation for the relief of acute and chronic complications of tuberculous glands in the abdomen is not complete unless not only the gland directly involved but any other group infected is removed. In widespread cases where eradication is impossible, it may be advisable to remove glands over which the peritoneum is thinned. 2. That many chronic abdominal symptoms are directly due to tuberculous glands and that removal of these is indicated where other causes for the symptoms cannot be found. 3. That even in the absence of symptoms tuberculous glands and more especially caseous glands should be removed whenever the condition of the patient allows. This is a measure of prophylaxis, and is as much indicated as the division of bands or of a normal appendix during laparotomy for other conditions.

Mr. W. H. THOMPSON commented on six of his cases in which abdominal tuberculosis had necessitated operation for acute intestinal obstruction. In one where perforation and massive destruction of intestine compelled him to do resection, the patient died. In four cases where involvement was so extensive and the condition of the children so poor his zeal was limited to combating the obstruction by short-circuiting the bowel. All these cases recovered and were apparently well. As those seriously ill cases had done so well he adopted the same treatment where the general condition might have permitted a more radical operation; the result was equally satisfactory. Knowing how intolerant children are to intra-abdominal liberties he believed that in such severe cases the operation of necessity (usually lateral anastomosis) ought to be the operation of choice.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

EXHIBITION OF CASES AND SPECIMENS.

THE annual meeting was held in St. Mary's Hospital, Manchester, on Jan. 19th. Prof. W. BLAIR BELL was elected President for the ensuing year and took the chair. The retiring president, Mr. H. CLIFFORD, gave his valedictory address on the history of abdominal surgery.

Dr. LEITH MURRAY showed three specimens of strangulation: (1) of a normal appendage, (2) of a fimbrial cyst, and (3) of a broad ligament cyst.

Dr. D. DOUGAL showed two specimens: (1) of spontaneous separation of one ovary and adhesion to the floor of Douglas's pouch; and (2) of a six months' fœtus with a teratomatous tumour growing from the sacral region, and suggested that these tumours might arise from the abnormal persistence of the "posterior growing point," and not be, as commonly considered, instances of conjoined twins.

Dr. LEITH MURRAY presented

Two Cases of Calcification.

The first case was one of calcification of an ovary in a single woman aged 31; 12 months' amenorrhœa was followed by two months' continuous bleeding, six months' menstrual excess, and a further two months' continuous bleeding. Curettage, removal of the calcareous ovary and rudimentary tube, with ventrofixation had cured the patient. Chemically the calcareous body consisted mainly of magnesium phosphate, with some calcium phosphate and traces of iron.

In the second case calcified bodies in the uterine cavity were associated with sarcoma of the ovary in a woman of 60. Three months' bleeding occurred 15 years after the menopause; a mobile, cystic tumour reached nearly to the umbilicus; the uterus was enlarged and bore a cervical polyp. After removal of the polyp and diagnostic curettage of the uterus, which appeared only to be enlarged, the abdomen was opened and the cyst, which presented the characteristics of a pseudo-mucinous cystadenoma, was removed together with the enlarged corpus uteri. On opening the uterus there were found lying loosely on the anterior wall seven flattened, glistening white, rosette-like bodies, 2·4 to 3·2 mm. diameter, and 1·8 to 2 mm. thick; these seemed to have been dislodged by the curette without leaving any indication of their original site. Chemically they consisted of calcium carbonate with traces of magnesium and iron. The ovarian tumour, on section, proved to be a short spindle-celled sarcoma. The patient was reported alive and well nine months later.

Dr. FLETCHER SHAW contributed two cases of

Carcinoma of the Urethra Treated by Radium.

The first case was that of a virgin, aged 45, who complained of great irritation of the vulva and painful micturition for four months previous to examination in November, 1919. A hard, red growth extruded from the urethral orifice, and extended for about ½ inch along the lumen. There were no inguinal glands. As so many of the cases previously reported had incontinence after operation, he decided to treat this case with radium, which was done in December, 1919. A year later there was some enlargement of the glands in both inguinal regions. These were removed and a few of them showed carcinomatous deposits. She was seen at intervals, and there was no further recurrence till December, 1922—three years after the first treatment with radium—when a small inguinal gland, the size of a pea, which had been overlooked at the first operation, was removed. This also contained carcinoma cells. There was no local recurrence in the urethra.

The second case was that of a married woman, aged 51, 3-para, who complained of irritation of the vulva, dyspareunia, and slight hæmorrhage for a few weeks. She had had a caruncle cauterised a few years previously. The growth was more advanced than in the other case, and consisted of a hard, red, friable mass, the size of a sixpence, extending all round the urethral orifice, and the urethra was thickened and hard for about 1 inch. No glands were found. Treatment with radium in October, 1922; two months later the growth was much diminished in size, though it had not disappeared. Patient was to have another treatment a month later. It was much too early to form an opinion as to whether the condition would entirely disappear under radium treatment, and whether there would be a permanent cure.

The PRESIDENT had seen an inoperable case of this description, and had also had to deal with a fistula left after previous operation by another surgeon; in that case he had been fortunate in being able to mobilise the base of the bladder and remaining urethra, and to bring them down to the vestibule with good functional result.

Dr. A. DONALD suggested the combination of radium and surgery as the ideal treatment in this condition.

Mr. J. CHISHOLM 15 months ago had a case involving the whole length of the urethra and the base of the bladder; he did a permanent, preliminary, suprapubic cystostomy, as advised by McGill of Leeds, and then removed the urethral growth and base of the bladder. As it was doubtful if the whole of the growth was removed, radium was inserted later. The inguinal glands were not invaded. Three months ago there was no recurrence, the patient was fairly comfortable and able to do a little housework.

Dr. FLETCHER SHAW, in reply, said that the President's remarks were particularly interesting, as he had not thought it possible to regain control of the urine after complete excision of the urethra and base of the bladder.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

JOINT MEETING OF THE SECTIONS OF MEDICINE AND SURGERY.

THIS joint meeting was held on Feb. 2nd, with Sir WILLIAM I. DE COURCY WHEELER, the President of the Surgical Section, in the chair.

GASTRIC AND DUODENAL ULCERS.

The PRESIDENT, in opening the discussion on this subject, said that the presence of a gastric ulcer often could not be definitely ascertained, unless an accident, such as perforation, occurred, or deformity, produced by cicatrisation, put an X ray picture beyond doubt. In cases of duodenal ulcer without deformity he had frequently obtained two X ray reports in the same case, which at first sight appeared contradictory. One report would state that there was pyloric spasm, some dilatation of the stomach, and gastric stasis. The next report that the pylorus was open, and that the stomach contents were shot through by the action of a hypertonic gastric muscle. These apparent inconsistencies could easily be explained when it was remembered that pyloric spasm frequently disappeared when the patient was put to bed on restricted diet and took alkalies freely. The spasm passed off, but the stomach remained hypertonic, and the contents were readily and forcibly propelled through an open door. It was therefore necessary to take into consideration whether a patient was at work without restriction, or in bed under medical guidance. In the small acute ulcers of females he did not think that X rays were helpful, and he did not think either that these cases were suitable for surgical interference. Excess of hydrochloric acid in the stomach was not, in his opinion, a characteristic sign of gastric ulcer; it occurred frequently in the absence of ulcer, when pyloric spasm was well marked; but ulcers in the region of the lesser curvature had no such association. It was a fallacy also to rely on the absence of hydrochloric acid in cases of suspected malignant disease. In half the cases where carcinoma arose primarily, or was grafted on a pre-existing ulcer, the presence of hydrochloric acid could be found, and, on the other hand, achlorhydria was sometimes but not frequently a feature in cases of ulcer of the duodenum. The significance of hæmorrhage was all important. They were all familiar with the hæmatemesis of biliary cirrhosis, while gastric hæmorrhage occurred frequently from pathological conditions of the pancreas, gall-bladder, appendix, and Fallopian tubes, and other organs without any lesion in the gastric mucous membrane. Oozing of blood from the stomach had been described by Hale-White under the term gastrostaxis. In renal disease it was not an uncommon symptom. He believed that it was seen during attacks of gastric crises in tabes. Capillary oozing or bleeding from arterioles quite commonly took place in all these conditions. Under the term "toxic gastric hæmorrhage" many such gastric lesions were at one time thought to be examples of vicarious menstruation. Sir William Wheeler closed with an able résumé of the questions connected with the operative treatment of so unmistakably a catastrophe as perforation. He did not believe that gastrectomy was the operation of choice in cases which were known to be non-malignant at the time of operation, but in the hands of Moynihan and Sherren the operation did not carry increased mortality. In special cases he preferred gastrectomy, the first of which he published in 1910. Once gastro-enterostomy was performed the patient again became a medical case, and with proper dieting and the administration of alkalies for three months the results would be very different from those obtained in patients allowed to go their own way.

Sir JOHN MOORE asked if the disappearance of pain after taking food was reliable as differentiating a duodenal from a gastric ulcer.

Dr. J. SPEARES said that personally he had never got much help from X rays in either gastric or duodenal ulcer cases, and though he always got the patients X rayed, he did not place much confidence in the results obtained. A duodenal ulcer presented peculiar difficulties if, where there was a perforation of the duodenum, it was necessary to do a gastro-enterostomy. Physicians met with numbers of cases of gastric ulcer which yielded readily to medical treatment and did not require surgery at all, but if there was any suspicion of malignancy, or if the patient did not yield to treatment, he was of opinion that they should always be operated on.

Dr. T. G. HARDMAN said that the diagnosis of ulcers by X rays depended upon (1) direct evidence—niche, or ulcer crater, accessory pocket, organic hour-glass deformity; (2) indirect evidence—spastic manifestations, retention, hypotonus, localised tenderness, a limited mobility. Of the indirect signs, the spasmodic hour-glass was the most important and was an almost certain sign of ulcer. Other secondary signs alone were sufficient to justify a diagnosis, but if correlated with clinical and laboratory evidence diagnosis might be made much more certain. Belladonna or atropine would differentiate between the intrinsic and extrinsic types of spasmodic hour-glass. The spasmodic type, when intrinsic in origin, was just as important from a diagnostic standpoint as the organic. Spasmodic hour-glass of extrinsic cause was not common, but might be due to a duodenal ulcer, gall-bladder disease, or appendicitis. When due to duodenal ulcer the spasm would not be relaxed by belladonna. Pseudo hour-glass stomach might be caused by contraction of the abdominal muscles, pressure of stomach against spine, adhesions, bands, atony, or gas in colon. The duodenal ulcer, he thought, was more difficult to diagnose radiographically than gastric ulcer. The direct sign was deformity of duodenal contour; the indirect signs included alterations in gastric tone, peristalsis, and motility, gastro-spasm, and localised tenderness over cap. The first three signs were an indication of duodenal irritation, and might be associated with conditions other than ulcer; they had frequently been found in association with mobile colon, with gall-stones, and with appendicitis. Taken in conjunction with a typical clinical picture, these were strongly suggestive of ulcer of duodenum. If the hyperactivity of stomach was found, in association with a retention and an enlarged stomach of normal outline, the diagnosis was almost certain. The coöperation of the physician was especially desirable in cases of duodenal ulcer. X ray was only part of the examination.

Mr. SETON PRINGLE was of opinion that in diagnosis of gastric ulcers, X ray reports were of the very greatest help. Duodenal ulcers were different, as their clinical history was much more definite and one could verify one's diagnosis much more directly. His treatment for gastric ulcer was—if small, cautery excision and gastro-enterostomy. If large, and in body of stomach, knife excision and gastro-enterostomy. If large and in pyloric portion, pylorectomy. He was of opinion that gastro-enterostomy alone could cure some cases of ulcer in cardia. His treatment for duodenal ulcer on anterior wall was cautery and gastro-enterostomy. If difficult of access he closed the pylorus, using the round ligament as ligature, and made a gastro-enterostomy. In gastric ulcer cases he mostly based his diagnosis on the effect of medical treatment, and in duodenal ulcer on nocturnal pain. He was of opinion that tenderness and hæmorrhage were fallacious signs.

Dr. ROWLETTE said that in practice it was often necessary to make a diagnosis of gastric ulcer without an X ray report or an operation. Unless the art of diagnosis was bankrupt, they must make practical diagnosis of cases which fell short of absolutely demonstrated certainty, and it was, he thought, in cases like this that physicians had most experience. Regarding diagnosis, he had obtained a good deal of help from X ray reports, and he would be very sorry to be deprived of the help of the radiologists. Very often cases which had no hæmorrhage and no perforation got well by medical treatment, the chief part of

which, in his opinion, was rest. Recurrence might take place, but that was liable to happen after operation also. He would be interested to know if many cases of gastric hæmorrhage had proved fatal, as he thought that must be an extremely rare occurrence.

Mr. A. A. MCCONNELL said that he had seen patients operated on for duodenal ulcer when no ulcer was found, but there was always duodenal irritation. Clinical symptoms did not tell much, as although gastric or duodenal ulcer was diagnosed, there were many other conditions which might cause the symptoms, and these had to be looked for. X ray reports had been of the greatest benefit to him in dealing with these cases, and he had found, almost invariably, that when the X ray report said there was an ulcer, at operation an ulcer was found, and when the X ray report said that the findings were only suggestive of an ulcer, at operation an ulcer was found.

Dr. M. R. HAYES said that he would like to draw attention to the fact that X ray examination was only one method of establishing diagnosis, and should not be regarded as the one thing which if it was positive was positive, and if it was negative was negative. He thought there should be more intimate coöperation between the physician or surgeon in charge of the patient and the radiologist.

Mr. STONEY said that he thought it was important to do a gastro-enterostomy at the time of operating for perforated duodenal ulcer. After gastro-enterostomy the return to feeding should be very gradual.

Dr. CROFTON said that he did not think that X ray reports were any aid to diagnosis in early cases of ulcer. He was of opinion that after surgical intervention relapse might be prevented if the specific cause was isolated.

The PRESIDENT, in replying, said that the first joint meeting had been a great success.

BATH CLINICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING of this Society was held at the Royal United Hospital on Feb. 2nd, with Mr. W. G. MUMFORD, the President, in the chair.

Dr. A. B. CLUCKIE showed a case of orbital tumour.

Dr. R. G. GORDON showed a case of Charcot's hip-joint in a case of ? hæmatomyelia. Also a case of rheumatoid arthritis with achlorhydria gastrica which, in addition, showed signs of early pernicious anæmia and early subacute combined degeneration.

Dr. V. M. COATES showed a case of early rheumatoid arthritis with enlarged glands and achlorhydria gastrica, and discussed the importance of the latter sign.

Mr. FORBES FRASER showed a specimen of round-celled sarcoma of the breast and a case of ? gumma of the breast. Also a specimen of a large gall-stone which had given rise to very acute abdominal symptoms, and a case of a very large gastric ulcer giving rise to remarkably few symptoms, with an X ray photograph.

Dr. D. L. SPENCE showed a blood smear from a case of lead poisoning showing punctate basophilia.

Dr. D. A. MITCHELL showed a specimen of a calcareous subpatellar bursa.

Dr. F. G. THOMSON showed a specimen of a large round-celled sarcoma of the kidney.

Dr. PRESTON KING showed an X ray of a fracture of the body of the fifth cervical vertebra which has developed tuberculous disease or secondary growth.

The PRESIDENT showed a case of severe double talipes and one of old arthritis of the hip of seven years' duration in a child of 10 showing signs of coxa vara.

Dr. CLUCKIE read a paper on the Differential Diagnosis of Acute Conjunctivitis, Acute Iritis, and Acute Glaucoma. He discussed the differential features of these diseases both with regard to objective signs and subjective symptoms. He described the correct methods of measuring the ocular tension and the pitfalls of the wrong methods.

Reviews and Notices of Books.

COLLOIDS.

The Colloidal State, in its Medical and Physiological Aspects. By Sir WILLIAM M. BAYLISS, F.R.S., M.A., D.Sc., LL.D., Professor of General Physiology in University College, London. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 95. 6*s*.

IN this unpretentious little book, which is sufficiently elementary to appeal to those with no more knowledge of physics than is necessary for them to pass their first medical examination, Sir William Bayliss tells the reader practically everything of any importance now known with regard to the colloidal state in its medical and physiological aspects. The author has by his own researches contributed much to our knowledge of colloids. Since the living body consists for the greater part of aqueous colloids, and since most of our food materials are of a colloidal nature, he might have been expected to assume the attitude of omniscience commonly adopted by the physical chemist who deals with biological problems. Sir William Bayliss is, however, before all else a biologist, and retains always a sense of proportion. He remains, with characteristic modesty and caution, well on the safe side in claiming little for the colloids in their application to physiology. Of the many first-class books, in different languages, dealing with various aspects of this subject which we have recently had occasion to review, this one is likely to make the widest appeal. It may serve either as an admirable introduction or as a valuable summary, and its modest compass serves to show that while lesser men require much space, a master can extract and present clearly the essence of a vast and complicated subject in a few brief chapters.

Kleines Praktikum der Kolloidchemie. Fourth edition. By Prof. WOLFGANG OSTWALD (University of Leipzig). With the collaboration of Dr. P. WOLSKI and Dr. A. KUHN. Dresden and Leipzig: Th. Steinkopf. 1922. Pp. 174. 3*s*. 4*d*.

THE course of colloid chemistry outlined in this useful little book consists of 183 experiments, most of them quite simple and requiring no elaborate apparatus. There is also, as an appendix, a list of commercial colloidal preparations obtainable in Germany. We can confidently recommend the book to teachers and others interested in colloid chemistry, on which subject the author has gained an international reputation. Though we have good English books on the subject, specialists in this country will find it useful to know on what lines Prof. Ostwald runs his course. The contents deal almost exclusively with laboratory work. The instructions for the carrying out of experiments are clear and the exercises chosen are well selected to illustrate all the fundamental properties of colloids.

INDUSTRIAL HYGIENE AND MEDICINE.

By E. W. HOPE, W. HANNA, and C. O. STALLYBRASS. London: Baillière, Tindall and Cox. 1923. With 122 figures in text. Pp. viii. × 766. 21*s*.

INDUSTRIAL medicine in the past has suffered from being dealt with almost by passing reference in textbooks devoted to public health on the one side, or to general medicine on the other. But in recent years growth of knowledge on the subject has been so considerable as to demand more particular exposition. Books have appeared entirely devoted to one or another aspect of industrial medicine, and now Dr. Hope and his colleagues have attempted the difficult task of bringing within the covers of one volume knowledge as regards both health and disease as affected by occupation. They have secured a great measure of success. The chapters dealing with vital statistics and general hygiene are clear, and the section on the treatment of industrial poisonings

is an admirable example of condensation, covering adequately in small space metallic poisons and the effects of noxious gases. Dust as a cause of disease is well discussed; the information is up to date with regard to recent research, and much useless nomenclature has been silently committed to the grave. In this section, however, as elsewhere in the book, the authors have not resisted the temptation to introduce process illustrations which can have little meaning for the uninitiated, and are not needed by those familiar with industries. Some overlapping occurs; for example, the subject of silicosis is dealt with twice, secondly at some length in the chapter on industrial infections. Although the principal forms of industrial dermatitis are succinctly described, this section, when dealing with cancer in occupation, is inadequate. The most promising research into the causation of cancer to-day—the experimental production of cancer in animals—is based upon a clue seized from industrial cancer; yet no reference is made to this important work. Another notable omission in the book is the absence of reference to fibrositis, such as Dupuytren's contraction, caused by occupation; while the inclusion of trade neuroses, such as writers' cramp, under industrial physiology, appears to be a mistake in classification. The chapter on industrial welfare is an excellent summary, though it rather suggests the presentation of facts by the method of compilation, than the expression of vivid thoughts placed on paper by authors intimately acquainted with the conditions of industrial life.

The book throughout bears signs of painstaking preparation. Its value is enhanced by three useful appendices, in which factory legislation is summarised (unfortunately no reference is made here to mining legislation), and by a fairly good index.

GYNÆCOLOGICAL AND OBSTETRICAL PATHOLOGY.

By ROBERT TILDEN FRANK, A.M., M.D., F.A.C.S., Fellow of the American Gynæcological Society, Hon. Fellow of the New York Obstetrical Society. London and New York: D. Appleton and Co. 1922. With 388 illustrations, of which 281 were drawn by the Author. Pp. 530. £1 1*s*.

IN this monograph the author has attempted to give information of value to the clinician and pathologist so that both will derive the greatest benefit. The book contains facts necessary for correct diagnosis and their clinical interpretation, together with an extensive bibliography in which special attention has been paid to American and English literature. The whole consists mainly of a collection of facts, not theories, and the illustrations are confined mainly to the display of microscopic sections. Chapters are devoted to technique, to the normal histology of the female generative tract, and to the relation of the normal histology to symptoms and physiological function. The various parts of the genital tract are then considered in detail and a chapter devoted to each one. Finally, consideration is given to the problems of obstetric pathology, malformation of the uterus, and the relations of the internal glands to gynæcology and obstetrics. In the chapter on the normal histology the description of the formation of the corpus luteum and the changes that occur after the rupture of the Graafian follicle are particularly fully described and illustrated, and the section dealing with the changes incident to menstruation is also very good. The thoroughness with which each condition is considered is well illustrated by that dealing with cysts in the vulva, in which no less than nine varieties are described. The vexed question of the frequency of such a condition as chronic endometritis is very clearly discussed, and the conclusion come to by the author is that chronic endometritis is an uncommon disease; because the uterus is an unusually well-drained organ and because the cyclical changes which take place each month are inimical to the continued growth of micro-organisms. Further than this, Dr. Frank thinks the condition is often confounded with endometrial hyperplasia by the pathologist, or considered as present by the clinician in cases where the endometrium is healthy which are in reality due to ovarian over-function. Possibly in some of these cases an endometrial inflammation was present; but if so it plays but a secondary and unimportant part.

All the chapters are well conceived and written, and the book contains a vast amount of information with a full bibliography which will render it of considerable value both to the pathologist and to the gynæcologist.

HUMAN CHARACTER.

By HUGH ELLIOT. London: Longmans, Green and Co. 1922. Pp. 272. 7*s*. 6*d*.

IT is relief to take up a book with a title like this and find that it does not claim to give an exposition of the "new psychology" and does not mention psycho-analysis. Mr. Hugh Elliot opens by noting that the study of character is based upon psychology, which is "merely a collection of haphazard and isolated observations, the significance of which is obscure, and must remain obscure until they have been 'explained' by physiology." Though direct references are rare yet it is plain that the author is familiar with the conceptions of modern psychology, which he has woven into his theme. At the same time he avoids the risks of definition, not hesitating, for example, to tell us that "the moral sentiment is a deep human instinct" (p. 214) and to leave the meaning to his reader's common sense, a common sense that might be puzzled to link this with an earlier remark, that "Morals are thus a more or less codified expression of social feeling," until we note that his "moral sentiment" must mean a sentiment that is not a source of morality but instinctively accepts it from the herd.

The author's main thesis is that although man is a reasoning animal he is not governed by reason but by native emotion, a seeming paradox that accords with the views of most psychologists. A realisation of its truth might well strengthen the power of reason and, as the author points out, should influence our attitude towards social and political questions. He has brought life to the dry bones of psychology and produced a pleasantly stimulating book.

LES GREFFES CHIRURGICALES.

By Dr. PL. MAUCLAIRE, Professeur Agrégé à la Faculté de Médecine de Paris; Chirurgien de l'Hôpital de la Pitié. Paris: J. B. Baillière et Fils. 1922. Pp. 312. 25*s*.

IN rather more than 300 pages Dr. Mauclaire gives a complete account of the history and progress of that branch of surgical procedure which deals with the transference of living or dead organised material from one individual, called the donor, to another, called the receiver, of whose body a true graft should become a living part. The author's wide experience of such operations enables him to offer valuable advice and to express opinions on the merits of various methods and materials

Skin-grafting, for example, in the form of rhinoplasty, appears to have been practised in India as long ago as 800 B.C. The materials which have been and may be used in grafting include all the connective tissues, as well as nerves, muscles, blood-vessels, and bone. In addition to these, glands and organs have been transferred from one living body to another. The most important factor in the estimation of the chances of a graft surviving appears to be its place of origin. The relative viability of grafts may be classified in the following order: From the receiver's own body (autoplasty); from the living body of another individual of the same species (homoplasty); from the living body of an individual of a different species (heteroplasty). Grafts taken from the cadaver, or which have been preserved in cold storage or sterilised, have, as might be expected, less prospect of survival. In the 20 "leçons" into which this book is

divided Dr. Mauclaire deals with each kind of graft in turn and gives a short résumé of what has been done by others and by himself, together with judicious remarks as to the value of each procedure. Among the whole glandular organs which have been transferred from one human body to another the ovary is perhaps the most interesting. Cases are on record in which after such a transfer the receiver, both of whose ovaries but not the Fallopian tubes had previously been removed, became pregnant and bore a child. Dr. Mauclaire considers that the donor of the ovary in such a case is the real mother of the child and not the parturient receiver. If a hereditary title or property were involved it is conceivable that a court of law might have some difficulty in deciding as to the legitimacy of such offspring.

Dr. Mauclaire concludes by prophesying great advances in the future. In reading his accounts of past experiments, failures, and successes we are struck by the great part which experiments on living animals have played in the progress of this branch of surgery. In the copious bibliography at the end of the book the names of British investigators are rare.

THE MICROSCOPE.

A Practical Handbook. By LEWIS WRIGHT. Enlarged and rewritten by AUBREY H. DREW, D.Sc., F.R.M.S. London: Religious Tract Society. 1923. Pp. 287. 5*s*.

THE many microscopists to whom Lewis Wright's "Popular Handbook to the Microscope" has long been a familiar friend will welcome the new edition of this excellent manual. Dr. Drew has carried out his editorial task with skill and sympathy. The original form of the book has been faithfully preserved. The first chapters are devoted to elementary optics and the practical optics of the microscope, and contain all that the student need know. Then follow chapters on the compound microscope and its manipulation and the technique of the subject, and in these, again, the student will find sound teaching and reliable advice. It is notorious, of course, that every microscopist has his likes and dislikes, and is prepared to defend the particular instrument of his choice against all comers. Dr. Drew is no exception, and it is easy to distinguish his favourite microscope. Nevertheless, he deals faithfully and well with the various types of instruments now on the market. The last part, treating of pond life, the vegetable world, and so forth, has been enlarged and enriched with many beautiful illustrations so that it forms a real introduction to a fascinating study; the price of the book brings it within the reach of all, and we wish it the success it deserves.

SYPHILIS.

By BURTON PETER THOM, M.D. Philadelphia and New York: Lea and Febiger. 1922. Pp. 525.

THERE is much in this volume that is excellent. The author has set down in very readable fashion a quite extensive, if not too well arranged, dissertation on syphilis, treating the disease not merely from the specialists' standpoint, but also from that of the physician. The manifestations of the disease on the internal organs are well discussed, and Dr. Thom's general remarks on treatment are deserving of careful study even by those who are not in agreement with him. He specially warns against insufficient and diffident treatment. The sections dealing with the history of the disease and the animal experimentation have been unduly condensed, and the pathology also is treated too shortly. The chapter on protozoal infections other than syphilis would seem out of place here. The stages of the disease are carefully depicted, but the dermatoses cannot be well illustrated in black and white. The author wisely included a chapter on early nervous syphilis where it belongs—i.e., under the heading of the secondary stage of the disease. In regard to treatment, in which the author has been successful in giving a useful impression of the value of the different remedies, his remarks deserve careful study. But the arbitrary description and illustration of "the correct" method of vein puncture will not find universal acceptance, and the section on intraspinous therapy is hardly up to date. The book is very readable, and we can only regret that the author has not drawn more on his great knowledge of the disease, omitting certain irrelevant or redundant chapters.

ORTHOPÆDIC NURSING.

Part I.: Joint Tuberculosis. By A. G. HUNT, R.R.C. Oxford: Hall the Printer, Ltd. 1922. Pp. 54. 2*s*. 6*d*.

THIS is a pamphlet prepared by Miss Hunt, superintendent of the Shropshire Orthopædic Hospital, Oswestry, for the use of the nurses at that institution, and presumably also for orthopædic nurses in general. That this branch of nursing is a specialty is well understood by those engaged in it and by surgeons who require the services of a nurse, but is perhaps too little realised by the nursing profession in general. The standard required at Oswestry will probably astonish general nurses who read Miss Hunt's book. There they will find a detailed and complete account of the application of the splints and plaster cases used at the hospital, together with a description of many of the important symptoms and signs of tuberculous joint disease. The information may seem to be of surgical rather than of nursing importance, but if the orthopædic nurse is to be occupied in home visiting, this knowledge is necessary.

So far as the details of methods described are concerned, these apply to the particular institution for which the book is written; in other institutions other methods prevail, but the principles remain the same and the book is, therefore, of general application. The pamphlet is well prepared and copiously illustrated. It completes the section on Joint Tuberculosis and will presumably be followed by a second section on the nursing of other conditions.

JOURNALS.

THE INDIAN JOURNAL OF MEDICAL RESEARCH for January contains 21 papers, among which some are of considerable interest.—W. N. F. Woodland writes on the ligature of one renal-portal vein in the living frog, being a repetition and extension of the experiments of Gurwitsch.—W. F. Harvey completes his bacteriological and laboratory technique in this eighth section, which closes appropriately with an index.—K. S. Mhaskar summarises the main points in his diagnosis of hookworm infection, in which he comments upon the methods of mass concentration of ova, recently perfected by Clayton Lane, and also writes on the relationship between humidity and ankylostomiasis.—J. W. Cornwall contributes a highly technical paper on the salivary glands and sucking apparatus of *Cimex rotundatus*.—R. Row writes upon cultures of tubercle bacilli, with special reference to the properties of an endolipase.—S. R. Christophers discusses the structure and development of the female genital organs and hypopygium of the mosquito, and with P. J. Barraud gives a short account of the descriptive terminology applied to male genitalia of these insects.—H. E. Shortt writes on *Herpetomonas ctenocephali*. W. F. Harvey and K. R. K. Iyengar do not believe that an increase in dose will make up for loss of potency of an old vaccine.—J. A. Sinton has two papers on Indian species of phlebotomus, and gives the results of some experiments in the treatment of malaria with alkali combined with quinine.—W. F. Harvey and S. R. Christophers describe malaria research and preventive measures in the Federated Malay States and in the Dutch East Indies.—P. J. Barraud revises the culicine mosquitoes of India.—There is also an interesting preliminary note on lathyrism by A. Howard, J. L. Simonsen, and L. A. P. Anderson.

Reports and Analytical Records.

BYNOL AND BYNOTONE.

(ALLEN AND HANBURYS, LTD., BETHNAL GREEN, LONDON, E.)

WE have received from Messrs. Allen and Hanburys specimens of their Bynol and Bynotone. Bynol contains 30 per cent. by volume of pure Lofoten cod-liver oil finely emulsified with extract of malt. A commission which visited Norway to investigate the cod-liver oil industry reported very favourably on the methods employed in the factory of the firm and on the oil produced. Bynol contains considerably more cod-liver oil than many preparations of malt and oil on the market, but it has been found possible to render it palatable.

Bynotone is composed of fresh bone-marrow, yeast, nuclein, hæmoglobin, and malt extract in well-balanced proportions supplying accessory food factors. This preparation is also quite pleasant to take. Both Bynol and Bynotone, especially the former, can be recommended in the stress of cold weather.

NORIT CHARCOAL.

(BOOTS PURE DRUG COMPANY, LTD., NOTTINGHAM.)

The process for obtaining this charcoal is as follows: The vegetable charcoal is purified with boiling dilute alkali and then treated with a suitably dilute boiling acid, is then thoroughly washed with water to free it from salts, and finally heated to incandescence in vacuum. The following experiments carried out with (*a*) the activated powdered charcoal, and (*b*) ordinary charcoal B.P. give evidence of the advantages of the activated powdered charcoal over the ordinary charcoal in every case where the medicinal use of charcoal is indicated:—

—	Treated with—	
	(*a*) Activated powdered charcoal.	(*b*) Powdered charcoal.
1. Solution of mercuric chloride 1%.	Reduced to 0·23%.	Only reduced to 0·99%.
2. Liq. arsenicalis B.P. 1% As_4O_6.	,, 0·77%.	Only reduced to 0·97%.
3. Atropine sulphate 0·75%.	,, 0·42%.	No reduction.
4. Morphine hydrochloride 1%.	,, 0·66%.	Only reduced to 0·99%.
5. Canal water, 40,000 living organisms per c.cm.	Reduced to sterile water.	Only reduced to 12,000 organisms.

The action of the activated powdered charcoal is rapid; in cases where the solution has been allowed to remain in contact with the charcoal for long periods and treated at intervals, the bulk of the adsorption was found to occur in the initial five minutes. In some cases, notably with mercuric chloride, the use of an increased quantity of activated powdered charcoal has resulted in the entire removal of the dissolved substance.

URODONAL AND FANDORINE.

(J. L. CHATELAIN'S LABORATORIES, 2 AND 2 BIS, RUE DE VALENCIENNES, PARIS.)

Urodonal is a preparation of hexamethylenetetramine sidonal and lysidine in the form of a granular effervescent salt. The components have long had considerable reputation in removing of uric acid and allied bodies, for which reason the drug is in quite popular use where it is required to produce a disintoxicating diuresis. The salt may be taken to the amount of three teaspoonsful a day, each teaspoonful to be taken in a tumbler of water, but, as a matter of fact, where the physical condition might make this quantity of fluid inconvenient a much smaller volume of water can be employed when it appears that the diuresis is quite as efficacious.

Fandorine is a blend of selected extracts of the ovary and mammary glands, their activity being enhanced by the addition of sedative and styptic substances. Prof. Raymond, professor of clinical medicine, Toulouse, who has made a special study of this drug, considers that it can be employed with safety in uterine congestion, remedying the symptoms without raising the arterial pressure. He justifies his observations by reporting on researches carried on in his laboratory. We fear it will not commend Fandorine to the medical profession to find among the principal indications for its use the development of the emaciated bust. The development of the female bust is a field which many persons have tilled with whom the proprietors of Fandorine would hardly desire to place themselves in competition.

"SPORTSMAN" GIN (TRIPLE DISTILLED).

(LANGLEY DISTILLERY, LTD., WORCESTERSHIRE, ENGLAND.)

A definition of gin which has been proposed is "a spirit distilled from grain, doubly rectified and then flavoured by distillation with juniper berries and other herbs." The name is a corruption of the word "Genièvre" or "Junever," the French and Dutch equivalents for juniper—the essential flavouring ingredient. Geneva, Hollands, and Schnapps are the Dutch forms of the drink. The use of gin in the pharmacopœia of the medical practitioner is well known, and the English varieties of the spirit may be unsweetened, as the sample under consideration, or sweetened by the addition of syrup. It is a spirit rarely adulterated and is probably one of the most harmless forms in which alcohol can be taken.

An analysis of "Sportsman" gin gave the following results:—

Specific gravity	0·9507
Alcohol per cent. by volume ..	40·7
Alcohol per cent. as proof spirit	71·21
Equivalent to	28·79° under proof.
Total acidity (as acetic) ..	0·02 per cent.
Volatile acid	Nil.
Extractives	0·001 per cent.

	Mg. per 100 c.cm. of absolute alcohol.
Volatile acidity	Nil.
Fixed ,, ...	60
Furfural	Nil.
Aldehydes	0·8
Esters as ethyl acetate	34

These figures are normal for a good gin. It possesses the characteristic odour and flavour of a high grade spirit of this class.

ALMATA.

(KEEN, ROBINSON AND CO., LTD. INCORPORATED WITH J. AND J. COLMAN, LTD., NORWICH).

In the Analytical Records in THE LANCET of Jan. 6th we published a report on Almata, and found it a highly satisfactory infant food. In that report we stated that "the food may be given to infants from one month old upwards." The manufacturers have now submitted to us various letters, of which the following is one, from medical men who have found that in cases where natural feeding has been impossible or medically forbidden, Almata can be given with advantage to infants from birth:—

17th January, 1923.

DEAR SIRS,—I have much pleasure in informing you of the gratifying success I have had with your "Almata" Food in feeding infants from birth—the babies thrive on it from the commencement and it is readily assimilated. I consider your "Almata" Food is the best for the artificial feeding of infants from birth as it is easily digested and the infants are free from digestive disturbance, and consequently are well contented, giving their parents the minimum of trouble and anxiety. Yours faithfully,

——M.D., M.R.C.S.

We publish the letter because the writer appears to have read into our report a meaning which it was not meant to have, and other readers may do the same.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 17, 1923.

SUBSTITUTES OR EQUIVALENTS IN PRESCRIPTIONS.

THE Guildhall conference of bodies interested in the administration of the National Health Insurance Acts presented many features of interest, so that it became necessary to appoint a standing committee to consider and report upon many points. The conference has done useful work in bringing together representatives of those concerned in the efficiency of the service, affording an opportunity for each section, doctors, chemists, and approved societies, to display the weaknesses or ventilate the grievances existing in their respective section. Now the Acts require certain skilled services from the medical profession, and, in addition to such services, demand certain materials from the dispensing chemists. During the conference it was asserted again and again that the drugs dispensed for panel patients are of a quality inferior to those dispensed for private patients. So far as this statement goes it is obviously incorrect, since the standard quality of each individual drug is necessarily that of the British Pharmacopœia. The course of the discussion indicated that most speakers had in mind the possible employment of some cheaper substitute for a more expensive article, perhaps a proprietary preparation. And here we are face to face with an ancient difficulty, the use of "substitutes," "equivalents," or "alternatives," when a prescriber has definitely asked for something else. Across the counter it may be legitimate to suggest the employment of an article which is just as good, but when dealing with a prescription it is currently held that it is improper to make any alteration in the ingredients until the wishes of the prescriber have been ascertained. We are well aware that the prescribing of proprietaries finds many adherents, and that the practice is stated to involve annoyance to the dispenser, but, however this may be, the practice is checked by the protests of those who control expenses.

The substitution of pharmacopœial drugs or preparations for proprietary articles, which are composed of the same ingredients, in the same proportions may be legitimate if the prescriber is notified, so that he can be certain that such substantial identity is obtained. On the other hand, we are treading on more delicate ground if we suppose that the idea of substitution is to permit the employment of one article in the Pharmacopœia for another, which is assumed to have a similar, an equivalent, or an identical action. While it is clearly in order to use hexamine when the same chemical substance has been masquerading in a prescription under some other name, it would be difficult to leave the dispenser to decide what substitute or equivalent he might give in place of quinine. The dose might indicate clearly that the quinine had not been ordered for malaria, but this would not justify an assumption that any other vegetable bitter might be just as good. The prescriber must always be credited with having had some definite reason for his selection of any particular drug, and there is, we believe, no ground for the fear that he would make any difference in prescribing for private or for panel patients. The remedy he selects, rightly or wrongly, is in either case that which he believes will benefit his patient, and, further, we hold that the dispenser loyally carries out the directions, and supplies the ingredients ordered. It cannot be denied, however, that certain preparations, likes mixtures or lotions, may differ widely in the hands of different dispensers, and this is inevitable so long as the colour, flavour, or odour is left to individual discretion. It is often thought that some important ingredient has been omitted, since the solution is colourless, or almost tasteless; hence an ignorant person may be tempted into one or other of two dangerous courses: he may omit to take the medicine which would afford relief, or he may recklessly consume it in disrespectful overdoses with disastrous results. The dangers of colourless solutions are, however, so well recognised, that both private and panel patients are equally protected, even though the colour, taste, and odour may vary greatly.

In one particular it is undoubtedly true that the dispensing for the insured person has not yet reached the standard of the private patients, and it is a result of the slow permeation of the knowledge of recent therapeutic advances. In response to the dictates of pharmacology there is a widespread tendency to discard many drugs of vegetable or mineral origin in favour of vaccines, sera, and derivatives of endocrine glands. It is obviously premature for these to be adopted for the stereotyped or routine treatment of all. The position of these articles must be further consolidated, and they must be adequately defined and standardised. Meanwhile some are being used for private patients who are in a position to be able to afford them. Another feature that will probably hinder any wide extension of the range of remedies suitable for insured persons is the hypodermic method of administration so frequently involved. This entails no difficulty when large numbers, as in the army, have to undergo identical protective treatment; but, even in the largest panel, each individual should be separately dealt with, according to the nature of his malady. In conclusion, it may satisfy the quite comprehensible qualms of the approved societies to affirm that an apparent difference in many prescriptions of insured persons, and in those of private patients, is the avoidance of the names of proprietary articles in the former, and the use of their pharmacopœial equivalents. It has long since been recognised that these equivalents were introduced to ensure uniformity of standard and composition, more particularly when some dangerous drug is present. So far from being detrimental, the use of such equivalents is really a public safeguard.

L'AFFAIRE SPAHLINGER.

THE position of the Spahlinger treatment has reached a stage which would be comic, were it not so supremely tragic—our French neighbours would certainly term it an *affaire*. The bactero-therapeutic institute at Carouge, near Geneva, is fully equipped with the most recent apparatus for serological and bacteriological research; it includes an experimental farm, and the whole installation would reflect credit upon a large scientific institution or university. It has been controlled and directed for ten years past by Mr. HENRI SPAHLINGER, who has trained an efficient staff in his own special methods. Precisely what his claims are, in the cure of tuberculosis, were set out in his own words in our issue of Jan. 7th, 1922. All who have visited the institute—and the visitors

have been many and distinguished—have been favourably impressed with the character of Mr. SPAHLINGER's work and with his sincere desire to put his remedies at the disposal of mankind. The remedy has not yet reached the stage of proved value and necessity. Mr. SPAHLINGER himself does not pose as a clinician, and the clinical trials of his remedies have been spread over several countries and have nowhere been carried out under research conditions. It is well known that the British Ministry of Health is prepared actively to encourage the experimental trial of the Spahlinger preparations under scientific supervision, so soon as supplies of the remedy are available for the purpose, and the British Red Cross has gone so far as to vote a sum of £30,000 to enable Mr. SPAHLINGER to produce his remedies to a larger extent so that they may be tried in this country.

The issue being thus clear-cut, it is with the keenest regret that we have noted during the last week evidences of a press campaign to raise funds in this country on the ground that the reports already published prove beyond doubt the great national importance of the movement. A Memorandum, ostensibly prepared by several medical men as an authoritative statement of facts, contains such regrettable exaggerations as that the methods of SPAHLINGER make it clear that tuberculosis can be prevented, and that when the treatment is over there is no trace of the disease remaining. There is a suggestion that, had they not been prevented from doing so by the fear of "oblique advertisement" (in the sense of the General Medical Council), many important signatures would have been appended to this statement. It seems to us improper to infer the weight of medical opinion in such a way. The Ministry of Health has found it necessary to reissue a statement of its position—namely, that up to the present the Minister has neither approved, nor disapproved, of the treatment.

The Memorandum justifies the appeal for funds by the grave danger from financial pressure to which Mr. SPAHLINGER's work is now exposed. We can only trust that he will submit to the independent investigation of his remedy which would put him right with the medical world and relieve him of his immediate difficulties. Could some arrangement be made to carry out this investigation, with the usual controls, at one or other of the research institutes in this country, two objects would be served: (1) the money could be raised without risk of forfeit; and (2) the control would bring conviction to those among whom it is carried out. We appeal to Mr. SPAHLINGER in the name of humanity, no less than in that of science, to consent to this course.

EFFICIENT DIAGNOSIS OF CANCER.

AT the present time a number of new and hopeful methods of treatment are being brought to bear upon cases diagnosed clinically as cancer, and the proving of these methods must depend in large degree upon the certainty of the diagnosis. Surgeons in all countries for many years past have been perfecting their powers of clinical acumen to make sure that they only intervene when it is needful for them to do so and then to good purpose. In a paper read before the Nebraska branch of the American College of Surgeons, and now reprinted in a volume of Collected Papers of the Mayo Clinic,[1] Dr. WILLIAM C. MACCARTY attempts to answer the question: Have we, as a profession, reached our greatest efficiency in the clinical diagnosis of neoplasms? In order to determine the present degree of diagnostic efficiency Dr. MACCARTY has compared the pre-operative diagnosis of a group of well-trained graduates of first-class medical schools in America and other countries with the actual condition found at operation, checked by a surgical pathologist. Confining his study to the mammary gland, on the grounds that it is easily seen and felt and a frequent site of a variety of neoplasms, he finds that surgeons are willing to commit themselves to a positive diagnosis in 78·5 per cent. of cases and unwilling to commit themselves definitely in 21·5 per cent. When clinicians are certain enough to say "malignant" they prove to be correct, Dr. MACCARTY finds, 94·5 times out of 100. This, as he says, is the percentage which doctors like to quote, but it is not an index of diagnostic efficiency, for there remain the 21·5 per cent. of cases in which the clinician is unwilling to commit himself before operation. Thus the actual percentage of malignant breasts diagnosed positively by the clinician correctly becomes reduced to 77 per cent., while the percentage of benign breasts diagnosed positively by the clinician correctly is only 50 per cent. Now most surgeons have been content to operate first and to hear the pathologist's report afterwards when it is too late to guide their action. It was the late Mr. C. B. LOCKWOOD who suggested in 1899 the plan of cutting frozen sections of every tumour at the time of operation and Mr. ERNEST SHAW who worked out the details of the method. Mr. SHAW first set out his method in our columns in 1910, and in our issue for Feb. 3rd, after an experience of 23 years, he summarised his results. The delay occasioned by his presence in the operating theatre is not serious; the whole process of freezing, cutting, mounting, staining, and examining a section requires five minutes or less. Mr. SHAW has made it a rule to prepare paraffin sections to examine at leisure later, and he states that in every instance—and he is writing of 540 cases—the leisurely has confirmed the hasty picture.

The pathologist may thus be a person of some moment in the operating theatre. Suppose, Dr. MACCARTY asks, you are the surgeon and have no surgical pathologist, what are you going to do with a patient who happens to be one of this 21·5 per cent.? In the whole series of 2100 cases which he studied, not one was treated too radically, and not one failed to receive a radical operation when necessary, by virtue of the fact that all the clinical diagnoses were checked at operation by a surgical pathologist. This is his answer to his own question. He then sets out certain reasons why all breast cases are not checked, and the list is worth quoting in his own words:

1. You may not have a pathologist.
2. You may not have tried to have a pathologist.
3. There may not be a pathologist near you.
4. You may think you are a great pathologist, especially a great gross pathologist, in which case you simply incise the tumour, immediately after its removal, and pass judgment.
5. You may not believe in frozen sections.
6. Your practice may not be large enough to allow you to pay a pathologist.
7. You may be depending upon the hospital to supply you with a pathologist.
8. You may have lost faith in pathologists because you have had sad experiences with men who call themselves pathologists, or with the so-called intern pathologist who happens to be sojourning in the hospital for a year or two doing everything in the categories of tissue pathology, bacteriology, serology, clinical microscopy, and sometimes roentgenology.

Dr. MACCARTY himself believes that it is unfair to perform a radical operation on the mammary gland in doubtful cases, but that it is fair with our present

[1] Vol. xiii. Published May, 1922. London and Philadelphia: W. B. Saunders Company. 60s.

knowledge to remove a sector of the gland-bearing structure for immediate examination. The lining of the ducts and acini of the breasts consists normally of two layers of cells; if these are present the pathologist is dealing either with a normal condition or one in which there is at most reaction to some disturbing factor. Radical operation is then unnecessary. Should the hyperplastic cells of the outer row be found to have invaded the stroma, malignant condition is present and radical operation should be performed. If after thorough microscopic examination a condition is found in which the outer cells, although hyperplastic, have not invaded the stroma, his experience indicates that the removal of the gland-bearing structure is sufficient. He has never seen recurrence after such a simple operation.

This is the type of service which the surgical pathologist can render. Whether the microscopical determination of malignancy is quite as simple as Dr. MACCARTY seems to imply is a question which we prefer to leave open. In the case of the breast numerous layers of cells are sometimes seen in simple inflammation; in some growths but one layer of columnar cells is present in the alveoli. Probably the most important point to determine in an early case is whether the basement membrane is or is not intact. Moreover, malignant disease of the breast is usually one of the easier forms of growth to distinguish in frozen sections. It is notoriously difficult to decide between some forms of sarcoma and inflammatory tissue even under the most favourable conditions. And on this decision may depend the amputation of a limb. Frozen sections and rapid staining can hardly solve difficulties which still vex the skilled pathologist after the whole ritual of hardening, embedding, and differential staining has been observed. Nevertheless, if all surgeons were to follow out this plan over a series of years, substantial progress might be made and an end be put to the fashion of guessing. Guessing should not be agreeable to the scientific surgeon, nor will it help to assess the value of non-surgical methods. The case for exact microscopic diagnosis of neoplasms is very strong indeed, but it would involve a large staff, and specialisation has gone on among pathologists to the extent of strictly limiting those who devote themselves to the study of morbid anatomy and histology. The method of "rapid diagnosis" has established itself to meet the emergency of the operating theatre, but it can in no way replace the careful and detailed pathological examination to which every breast, and indeed every tumour, removed by operation should be submitted. The pathologist may still be unable to suggest what course the case showing an unusual type of tumour is likely to take. Mr. SHAW'S plea is valid for a national pathological museum, where examples of every kind of malignancy may be obtained. For microscopic examination is the only really efficient control to the clinical diagnosis, and until the necessity for adequate controls is as clearly recognised by the clinician as it is by the laboratory worker the outlook for progress in diagnosis and treatment will never be as hopeful as it might.

ROYAL SANITARY INSTITUTE.—A meeting will be held on March 2nd and 3rd, in the Town Hall, Sheffield, when discussions will take place on Extraneous Matters in Food and the Prevention of Disease by Feeding, to be opened by Mr. J. Evans, city analyst, and Prof. E. Mellanby, respectively. The chair will be taken by Dr. Louis C. Parkes. On March 3rd visits will be paid to the Corporation Sewage Works, at Wincobank, and the works of Messrs. Newton, Chambers and Co., at Thorncliffe.

The annual congress will be held at Hull from July 30th to August 4th next.

Annotations.

"Ne quid nimis."

WILHELM KONRAD V. RÖNTGEN.

THE death is announced of Prof. Röntgen at Munich, in his seventy-eighth year. Born in 1845 at Zennep in Rhenish Prussia, Wilhelm Konrad von Röntgen was educated in Holland and at Zurich, where he became doctor of science in 1869. In 1885, after holding various appointments in German universities, he became professor of physics at Wurzburg, where on Nov. 8th, 1895, he discovered X rays in circumstances so well known as to render description unnecessary. Although the exact nature of these rays has not yet been ascertained, their use immediately resulted in a great advance in many branches of scientific work. The medical and surgical application of the rays first took the direction of localisation of coarse foreign bodies, as bullets, but almost immediately a dozen directions were seen in which the discovery would advance therapeutics. Apart from its medical uses, great advances in physical and industrial investigation have also been made possible by the discovery. The medical aspects of Röntgen's discovery form a story that must be told at some length later.

THE PATHS OF INFECTION.

UNTIL the last few years the accepted theory as to the dissemination of many of the infectious diseases of this country was that the victim was always inoculated from a previous case, and that the virus was conveyed from the one to the other by direct contact or some similar direct transmission, such as the breath, or by means of fomites. With small-pox it may be said that our experience accords with this theory, and that action based on the isolation of the sick from the healthy, and on disinfection, has been successful. There are certain other diseases, such as measles and chicken-pox, in which the infection also appears to be spread directly, although there is not the practical evidence of the successful application in the community of measures based on the theory. But our experience with scarlet fever and diphtheria points in the opposite direction. If the *usual* method of spread were by direct infection or through fomites, it would be reasonable to expect that prompt isolation in hospital of nearly every diagnosed case, followed by disinfection of the infected room, clothing, and bedding, which is the method practised in many of our sanitary areas, would have resulted in a great reduction in these diseases. It has been the subject of comment that there is so little evidence of any such diminution, and we understand that the practice of treating the cases in their own homes, which is being reverted to in some districts and has always been in vogue in others, results in no excessive incidence.

It is evident from such facts that, while there may be no grounds for thinking that the recognised case of scarlet fever or faucial diphtheria cannot infect a susceptible person directly, yet such direct transmission is not the ordinary way of spread. What the ordinary channel of infection may be is unknown. The knowledge of the cause of diphtheria which bacteriology has afforded has not yet led to the tracing out of this path. But it has shown that only a minority of the population is susceptible, and that the causative bacilli are to be found in many more persons in an infected community than the disease itself. The facts may be explained on the assumption that the infection is spread broadcast from one naso-pharynx to another, but that only a minority of the infected—those who lack immunity—develop the disease. This has been suggested as the mode of spread in certain other diseases like cerebro-spinal fever, which under present-day civilian conditions exhibits almost no power of direct infection; and it may well apply to scarlet fever,

to which a large proportion of the population appears to be immune. In the latter disease bacteriology affords no help, and it is remarkable how meagre is our knowledge, not only as to the way in which it spreads in the community, but even as to what discharge from the patient is infectious. The old idea that the desquamation was especially dangerous is not greatly credited by most of those with long experience of the disease, while morbid conditions of the nasopharynx and other parts, especially those causing discharges, are viewed with the most suspicion. There is a growing tendency also to doubt the time-honoured belief that scarlet fever is to any important extent spread by infected articles, a belief sanctioned by the disinfecting operations which are carried out in every case by nearly all local authorities. This practice is much on the same footing as that of the hospital isolation of scarlet fever, and we believe that several medical officers of health have abandoned it, without any increase in the disease becoming apparent in their districts. In our present state of knowledge it is difficult to affirm or deny that infected articles may carry the disease, or to say how long the infection can persist in them. In anthrax and vaccinia we have examples of diseases in which the fomites will retain the infection for prolonged periods. An outbreak of scarlet fever in a home county was recently attributed to the reading of a book which had been used by a scarlatinal case 20 years before. In regard to this and similar instances we should not lose sight of the circumstance that in the investigation of scarlet fever the most careful inquiry often fails to reveal the immediate source of infection.

THE CŒLIAC DISEASE.

ACCORDING to Dr. Rood Taylor,[1] of Minneapolis, who records seven illustrative cases, the cœliac disease was first described by Gee in 1888, since when Reginald Miller[2] has found about 50 papers bearing on the subject, though many of the cases are described by other names, such as Herter's infantilism, intestinal infantilism, acholia, pancreatic infantilism, or chronic intestinal indigestion. The disease has never been recognised in a breast-fed baby. In its typical form it is always chronic. The patients are under size and under weight. X rays show delayed skeletal development, and the muscles are small, soft, and weak. The abdomen is distended, the stools are voluminous, grey, greenish, or brown, sometimes of the consistence of porridge, sometimes full of mucus, and sometimes liquid. Acute attacks of diarrhœa occasionally occur, especially after ingestion of carbohydrates, but most of the time the patient has not more than two or three stools daily. The fat content of the fæces is greatly increased. The discharge of calcium is also increased and to a greater extent than is accounted for by the amount of fatty acid, volatile acid, and phosphate present in the stools. The rate of metabolism is slightly diminished. There is usually some degree of secondary anæmia and the spleen is often moderately enlarged. The mental activity of the patients, as a rule, far outstrips their physical growth. The most frequent complications are scurvy, tetany, œdema, and purpura. In three of the five cases of undoubted cœliac disease on record, in which an autopsy has been prepared, there were small-celled infiltration and fibrosis, especially about the pancreatic ducts, and one also showed fatty degeneration of the liver. In the other two cases no changes could be found which could in any way explain the lesions present. According to some writers, the disease is due to infection either of the bowel contents or of the intestine with bacilli such as *B. bifidus*, *B. infantilis*, or *B. coli*, and a resulting defect in absorption. Other hypotheses include chronic infection with some type of dysentery bacillus, deficient pancreatic secretion, deficient secretion of bile, vitamin deficiency, and an overgrowth of proteolytic bacteria in the bowel contents. In all Dr. Taylor's cases the disease had been preceded by a long period of unsuitable feeding or by a parenteral infection such as whooping-cough or chicken-pox, or both. Gastric achlorhydria was present in the five cases in which the stomach contents were examined. X rays in each case showed an atonic dilated colon. The liver was smaller than normal in every case. One case was complicated by Banti's disease, another case showed leucin and tyrosin in the urine, and in yet another patient the duodenal fluid contained urobilinogen. Dr. Taylor recommends that the following principles should be followed in the dietetic treatment of the disease: (1) The use of sour milk and fruit acids in recognition of the achlorhydria; (2) a supply of readily absorbable carbohydrate primarily for its good effect upon the liver; (3) restriction to a high protein diet for months before adding starches and fats; (4) prevention of fæcal accumulation which may undergo bacterial decomposition.

[1] American Journal of Diseases of Children, January, 1923.
[2] British Journal of Children's Diseases, January–March, 1921.

INDIRECT ADVERTISEMENT.

IN THE LANCET of Dec. 9th, 1922, we published a report of the discussion by the General Medical Council during its November session of the motion brought before it with respect to medical advertising. Various inaccurate statements have recently been made in the lay press in connexion with action said to have been taken by the Council in this direction. We learn, for example, that the Council "have lost no time in taking action upon medical advertising," and that the matter has been submitted to the Executive Committee, the "full text" of whose "decision" is then set out. We are authorised to state that no action of any kind has yet been taken by the Council or by the Executive Committee. We may point out that the "full text" above referred to is a reproduction, not quite in the same words, of the resolution relating to advertising adopted by the Council on Nov. 27th, 1905, portions of which were read by Dr. Bolam in the course of his address to the Council on Nov. 30th last.

A medical contemporary, which has been misled in company with the lay papers, may have been crediting the Council with action in response to a feeling that "something ought to be done," and the following letter to THE LANCET supports the idea. M.D. writes:—

> "In view of the late pronouncement of the General Medical Council on advertising what are we to think of a eulogy contained in the *Western Mail*—it even takes up more space than the actual announcement of the Royal birth—of a well-known physician—of his brother—of his late father—of his mother—of his sister—and capping all by the insertion of his photograph. The occasion is the birth of Master Lascelles, and the Welsh physician's name does not appear in the bulletin, or the *Court Circular*. Are the favoured ones in the medical profession who attend the 'great ones of the earth' exempt from the regulations of the General Medical Council?"

We have read the article sent to us and agree that it is deplorable. We are ready to believe that the doctor in question had nothing to do with its publication, but the material for the réclame seems surely to have been obtained from friends or relatives.

A TUBERCULOSIS CENSUS.

UNDER the heading "An Investigation into the Distribution of Pulmonary Tuberculosis and Other Respiratory Diseases in the West Riding of Yorkshire," Dr. John B. McDougall[1] has recently published a very instructive survey of the incidence of tuberculosis in various districts and under various conditions. The population of the West Riding is just over three million, and the investigations were confined to death-rates and not to dispensary attendances or notifications of phthisis. It was found that pulmonary tuberculosis inflicts a much higher mortality rate on children in and about Rotherham than in Western Yorkshire, and that the mortality rate in adults over 45 is greater in Western Yorkshire

[1] Tubercle, January, 1923.

than in the Rotherham area. Again, although the mortality rate from phthisis in Bolton-on-Dearne and Wath-on-Dearne is about double that in Todmorden Borough in children and young adults, the position is reversed in adults over the age of 45. These apparent paradoxes are of special interest in connexion with Dr. J. Brownlee's differentiation of pulmonary tuberculosis into age types. Many other interesting points are brought out by Dr. McDougall's survey, which deals with the relation of subsoil, altitude, rainfall, housing conditions, and other factors to the incidence of tuberculosis. He concludes that "infection, immunity, and industrial environment play the most important rôle in determining the incidence of disease in various age groups."

SCHOOL INFECTIONS.

A CODE of rules first issued nearly 40 years ago by the Medical Officers of Schools Association is largely responsible for the remarkable immunity to disease in our public schools. The eighth edition, which has just appeared,[1] deals fully with the newer diseases—cerebro-spinal fever, poliomyelitis, and encephalitis lethargica. The important fact is noted that the diphtheria bacilli harboured by so-called carriers are often found to be avirulent when tested on guinea-pigs, and that such carriers may then be considered innocuous. The virulence test should always be applied. Attention is also drawn to glandular fever, which may occur in epidemic form and be mistaken for mumps. The appendix on disinfection in the new edition is much simplified in the light of recent knowledge. Cleanliness is recommended as the basis of all disinfection, and soap and water as the best general disinfectant, the effect being enhanced by the addition of washing soda to the water. With regard to the food and milk supply, the school medical officer is advised to consider and investigate the dietaries, their balance and composition, in respect of calories, protein content and vitamins, and the variation in meals. It is recommended that the milk supplied to the schools should be of a standard of purity not lower than Grade A, while the contract for supply should always include a proviso that milk can be purchased elsewhere and charged against the contractor if at any time the milk supplied by him is proved on delivery not to be "of the nature, substance, and quality demanded." This up-to-date and well-indexed code should be in the hands of every school medical officer.

AN AUSTRALIAN INSTITUTE OF TROPICAL MEDICINE.

THERE seems to be every prospect of the development of an Australian Institute of Tropical Medicine, which has recently passed through many vicissitudes, into a first-class school. For many years it had been realised that Australia should provide a place where up-to-date training in tropical medicine is given, for part of Australia lies within the tropics and is in intimate contact with countries infected with malaria and many other exotic diseases. The Australian Institute of Tropical Medicine was opened in Townsville, Queensland, in 1913, under the directorship of Anton Breinl, with a highly-trained and competent staff, but the original conception of making the institute a post-graduate school for tropical hygiene failed. At a later date the Federal Government took over control, but, on account of unforeseen but inevitable difficulties in war time, had no better success. The failure of the institute as a school gave the staff admirable opportunities for research work, which has been carried out with success. Dr. Breinl and his colleagues made valuable contributions to the physiology of the white man in the tropics, having a direct bearing upon the "White Australia" Policy. With the creation of the Commonwealth Department of Health the reconstruction of the Australian Institute of Tropical Medicine was undertaken. By arrangement with the International Health Board of the Rockefeller Foundation a section of the work on hookworm prevention is to be undertaken in collaboration with the staff of the institute, and simultaneously an inquiry into the incidence of malaria and filariasis has begun. With the reorganisation of the staff, Dr. R. W. Cilento has been appointed to take charge, and the institute will henceforward be used as one of the laboratories under the Department of Health. The Federal authorities have also arranged with the universities of Melbourne and Sydney for the institution of a course in tropical hygiene requisite for a diploma. The first course commenced with the year, and the programme as now outlined would seem an admirable one. The movement is capable of expansion and deserving of success.

MESENTERIC VASCULAR OCCLUSION.

Dr. Leo Brady,[1] of Baltimore, reviews the literature of mesenteric vascular occlusion and records 14 cases which have occurred at the Johns Hopkins Hospital since 1895, including one in which he successfully resected the infarcted intestine. In 11 cases intestinal infarction occurred, while in 3, in which the condition was not recognised until the autopsy, the thrombosis progressed very slowly and sufficient collateral circulation developed to prevent the formation of an infarction. In all but one case, in which the inferior mesenteric vessels were affected, the occlusion was in the superior mesenteric vessels. Contrary to what has been found by most observers, who state that the veins are affected much less frequently than the arteries, in the present series the mesenteric arteries were involved in only 4 cases and the veins in 8; in 2 it was impossible to tell which of the two had caused the infarction. Occlusion of the mesenteric veins is always due to thrombosis. Either embolism or thrombosis may cause occlusion of the mesenteric arteries. Post mortem, however, it is often difficult to distinguish between thrombosis and embolism of the mesenteric arteries. The average age of the patients in the present series was 45 years, the oldest being 80 and the youngest 24; 8 were men, 6 were women, 11 were white, and 3 coloured. In 10 cases the following ætiological factors were present: endocarditis with aortic insufficiency and stenosis, 2 cases; marked arteriosclerosis, 2 cases; cirrhosis of the liver, 2 cases; Raynaud's disease, 1 case; carcinoma of the pancreas with metastases in the liver and neighbouring glands, 1 case; polycythæmia, 1 case; partially strangulated inguinal hernia with abscess formation, 1 case. In all the cases there was a history of abdominal pain and vomiting, and on examination abdominal tenderness and muscular spasm were found. At the onset the temperature was only slightly raised, but at the end of 24 hours almost every patient had a temperature of at least 102° F. In most cases there was a leucocytosis of 20,000 and a pulse-rate of 120. Constipation was present in all, but in only two instances was blood passed by rectum. The rapidity with which the symptoms developed depended on the size of the mesenteric vessel which was occluded. In the 11 cases of intestinal infarction the duration of symptoms before death or operation ranged from 1 to 23 days. Unlike some writers who hold that there is a clinical picture characteristic of mesenteric vascular occlusion, Dr. Brady maintains that the symptoms are indistinguishable from those of acute intestinal obstruction due to other causes. On laparotomy, which is the only method of treatment for intestinal infarction, the peritoneal cavity is usually found to contain a moderate amount of serosanguineous fluid, which in advanced cases is frequently sanguineo-purulent. The mesentery supplying the infarcted intestine is of the same purplish black colour as the intestine down to its root. Eight of the 11 cases of mesenteric vascular occlusion that caused intestinal

[1] A Code of Rules for the Prevention of Infectious and Contagious Diseases in Schools. Eighth edition. London: J. and A. Churchill. 1923. 2s. 6d.

[1] Archives of Surgery, January, 1923.

infarction proved fatal—a mortality of 72·5 per cent.—and 5 of the 8 patients treated by laparotomy died—an operation mortality of 62·5 per cent. High as these mortality rates are, they show a distinct improvement over those of Jackson, Porter, and Quinby, who, in 1904, reported a total mortality of 94 per cent. and an operative mortality of 92 per cent. for all the cases which had been published until then.

INDUSTRIAL MEDICINE.

THE science of industrial medicine is gathering way; it now possesses its own journals and its own band of research workers. The human organism is a delicate reagent, and no better way exists of studying its reactions than by close observation made upon groups of workers in this or that industry exposed to some particular influence whether chemical or environmental. New knowledge is being acquired, and reactions are taking place between it and other fundamental sciences. Thus physiology is being affected by studies of human activity in industry; while, on the other hand, the results of physiological research are being given practical application in revolutionising the science of ventilation in factories and are making known the necessity for studying the relation between energy output and food requirements. In another direction research into industrial work associated with exposure to heat and humidity has thrown light on the causation of heat stroke. Two particularly interesting lines of advance which are being followed may be especially noted. The experimental production of cancer in animals has resulted from observing how epitheliomata occurred among those exposed to coal-tar products, such as chimney sweeps and men manipulating pitch; the materials to which they were exposed, when applied over a long period to the tissues of animals, cause malignant growths, the study of which from their commencement is being thereby rendered possible.[1] The discovery of the toxicity of colloidal silica, of its capacity to cause fibrosis in the body, and of its power to break down the resistance of rodents to tuberculosis, originated through noting how those exposed occupationally to the inhalation of silica dust suffered an appalling mortality from phthisis[2]; there are possibilities in this research which may throw important light upon the whole question of tuberculosis. Workers in other fields of medicine who are unable to follow all that is being done require a summary to help them. Such a summary has just been provided in a text-book which we review on p. 339 of our present issue. Although this science originated in this country, its practice is being applied far more in the United States than at home, and applied with economic success. We continue to maintain our position with regard to research, but even here our colleagues in the United States are treading closely upon our heels. Unless our industrial world awakens to what is taking place, America will assuredly reap the harvest, the seed of which we have sown.

THE ROUTINE TREATMENT OF SYPHILIS.

A MODIFICATION of the routine treatment of syphilis which has been carried out at King's College Hospital is described by Dr. M. Sydney Thomson in the January number of the *British Journal of Dermatology and Syphilis*. The modification consists in the administration of at least three intravenous injections of 0·9 g. of novarsenobillon, with an interval of three weeks between each injection. These doses are continued until the W.R. becomes negative. The object that the writer has in view in carrying out this particular plan of treatment is to avoid complications without in any way impairing the efficiency of the end-results. He places great emphasis on the danger of accumulation of arsenic in the body, and considers that the old method of repeated small doses of novarsenobillon is particularly liable to lead to such accumulation. He also mentions the possibility that the spirochæte may develop a resistance to arsenic under the form of treatment commonly in vogue. Clinical experience has shown that a dose of 0·9 g. novarsenobillon is well tolerated and that the interval of three weeks between successive injections is the right one. Dr. Thomson summarises the results obtained from this form of treatment in his own clinic. Analysing 500 cases subjected to this method, he states that of primary cases 90 per cent. gave a persistently negative W.R. after their third injection, and a further 6·5 per cent. after four to eight injections. Of the secondary cases, 71 per cent. gave a negative W.R. after the third injection and 19 per cent. after four to seven injections. Patients are at the same time placed on mercurial treatment, the mercury being given preferably in the form of pills. He does not favour intramuscular injections as a routine, as he considers the tendency to loculation a very real objection. As a guide to treatment he considers the W.R. of the greatest value, a relapsing W.R. generally giving warning of a clinical relapse. In the case of pregnancy, however, the reaction is much less reliable. No ill-results have followed the adoption of Dr. Thomson's methods in cases of pregnancy, even when injections were continued up to the day of parturition.

[1] THE LANCET, 1921, ii., 1117.
[2] Ibid., 1922, ii., 885.

THE ACID-BASE EQUILIBRIUM OF THE BLOOD.

THE subject of the reaction of the blood, and the acid-base equilibrium on which this depends, is one of considerable importance in many branches of medical research. The theory of the acid-base equilibrium rests on well-ascertained facts, and may, on the whole, be considered to be fully established. The same cannot be said with regard to our knowledge of the alterations in acid-base equilibrium even in health, still less in disease. The relation of alterations of blood reaction to respiration, and vice versa, although the subject of numerous inquiries, cannot be said to have been fully explored. Yet, although there are differences of opinion, we are led to believe, according to the newly-published report on this subject by the Medical Research Council,[1] that these differences of opinion are less fundamental than has often been supposed. They can, as a fact, be traced in part to simple differences in nomenclature and definition, in part also to differences in experimental technique. As an illustration we may mention the nomenclature in regard to acidosis. The Committee responsible for the report suggest that this term should be abandoned[2] altogether, and that the two separate conditions which have hitherto been given this common name should be re-named. For conditions in which the reaction of the *circulating blood* is less alkaline than normal, they propose, where a name is used at all, to employ the term "acidæmia": for the state in which the blood is abnormally alkaline the term "alkalæmia" is proposed. These terms do not refer to the fixed carbon dioxide content of the plasma, nor to the presence or absence of acetone bodies in the blood or urine. When these substances appear, then the name "ketosis" is suggested, quite irrespective of what the reaction of the blood may be. Another instance in which the current nomenclature is criticised is in relation to the term "alkali reserve"; for various reasons this is considered to be unsatisfactory, and the Committee suggest the use of the term "fixed carbon dioxide" as less equivocal. As regards discrepancies attributable to differences of technique,

[1] The Acid-Base Equilibrium of the Blood, by the Hæmoglobin Committee (chairman, Mr. J. Barcroft; secretary, Prof. C. Lovatt Evans), Medical Research Council, Special Report Series, No. 72. H.M. Stationery Office. 1923. Pp. 70. 2s.
[2] Some reasons why term should be abandoned were given in an article in THE LANCET by C. Lovatt Evans. (Vol. ii., 1921, p. 867.)

the most striking ones discussed are those for the determination of the carbon dioxide pressure in the blood and alveolar air, and those concerned with the determination of the reaction of the blood in exercise. The report, expressing the considered and agreed statement of 11 members, all of whom have worked on various branches of the subject, should prove very valuable, and provide some solid ground for further progress. The subject is not treated in great detail, the object of the report being merely to present the current opinions held in this country.

"ROYAL OCTAVO."

Mr. S. P. Vivian has lost no time in introducing an innovation into the General Register Office for which all students and librarians will bless him. The first instalment of the Registrar-General's Statistical Review of England and Wales [1] for the year 1921 has just appeared in "royal octavo" instead of "folio foolscap." It is the statutory duty of the Registrar-General to collect and publish in the intervals between one census and another such information as will best help central and local authorities, and in order to do so effectively he has now divided the tables hitherto published together into two sections of (1) medical statistics, (2) civil statistics—each section to be issued when ready without waiting for the other. The present volume consists of those tables, contained in the old index, which had a medical interest, suitably rearranged. It also comprises the annual figures of the notifications of infectious diseases hitherto separately published. We must not wait for a formal review of the volume to say how much the innovation and the handy form are appreciated.

NEW WORK ON RENAL SECRETION.

PHYSIOLOGISTS have long been divided into two camps, those who believe that the excretion of urine can be explained entirely on the basis of filtration and reabsorption, and those who consider that in order to explain it, it is necessary to add to filtration and reabsorption secretion by the tubules. In the current *Bulletin* of the Johns Hopkins Hospital appears an article by E. K. Marshall, jun., and J. L. Vickers, entitled the Mechanism of the Elimination of Phenolsulphonephthalein by the Kidney—a proof of Secretion by the Convoluted Tubules. These investigators have set out to throw light on the difficult subject of renal secretion. In their paper the writers briefly summarise the existing evidence that favours the secretory theory of urinary excretion under the following headings: (1) Investigations by histochemical methods indicating an accumulation of various urinary constituents or foreign substances in the cells of the tubules; (2) the classical experiments of Nussbaum on the amphibian kidney; (3) the finding of various granules and vacuoles in the cells of the convoluted tubules; (4) attempts to determine the site of elimination of various substances by injuring certain parts of the kidneys and noting the effect of this damage on elimination. The experiments performed on dogs by the writers, dealing with the elimination of phenolsulphonephthalein by the kidney, and described in their paper, appear to lend additional support to the view that in urinary excretion there occurs an active secretion as well as a filtration and reabsorption in the kidney. They found that if phenolsulphonephthalein is injected into a dog, the animal is killed shortly afterwards, the distribution of the phthalein in the blood and other tissues of the body being studied, the kidneys will be found to contain an abnormally high concentration of that substance. In order to be sure that elimination of the urine had ceased during the experiment the spinal cord was divided at the atlanto-occipital junction, elimination of the urine ceasing when the blood pressure fell below 40 mm. The concentration of phthalein in the various tissues of the body was then determined, and it was found that on occasions the kidneys contained as much as 35 per cent. of the total amount of phthalein injected, although they made up only about 0·6 per cent. of the total body-weight. The concentration of phthalein in the kidneys was invariably found to be many times greater than the concentration in the blood or any other tissue. As no urine flowed from the ureters during the experiments the phthalein must either have been concentrated in the renal cells or transferred through these to the lumen of the tubules. Evidence strongly points to the former of these two possibilities having occurred. In longitudinal sections of the kidney the phthalein was made evident by a brilliant yellow colour, and it could be easily seen that the yellow colour was almost entirely confined to the cells of the convoluted tubules, and that it was absent from the lumen. It will, therefore, appear that the phthalein had been specifically taken up from the blood by the cells of the convoluted tubules. Presumably after storing in these cells it was slowly given out in the urine.

These interesting experiments are undoubtedly a valuable contribution to the physiology of urinary excretion. They furnish sufficiently strong evidence that the processes which have been designated filtration, reabsorption, and secretion all play a rôle in the elimination of the urine, and that filtration and reabsorption alone cannot account for the phenomenon of urine excretion.

[1] New Annual Series. No. 1. Tables, Part I. Medical. H.M. Stationery Office. 1923. 15*s*.

INFECTIOUS MONONUCLEOSIS.

ACCORDING to Dr. Warfield T. Longcope,[1] of the Presbyterian Hospital, New York, who records ten cases which he has observed in the course of the last 13 years, the terms "infectious mononucleosis," "glandular fever," and "acute benign lymphoblastosis" have been applied to a symptom-complex which, though not very common, is sufficiently frequent to be of importance, both from the practical and theoretical standpoint. The clinical course presents a fairly uniform picture. The disease usually occurs in young adults or adolescents. Many of the patients, as is exemplified in Dr. Longcope's series, have been medical students or young physicians. The onset is gradual, with malaise, headache, and irregular fever. Pharyngitis, tonsillitis, or tracheitis may be initial manifestations. Rarely the first sign of the disease is an enlargement of the cervical lymph glands; as a rule, the glands do not become enlarged till a few days later. The enlargement is sometimes confined to the cervical glands, but frequently the axillary, inguinal, epitrochlear, and possibly the bronchial glands become involved. In some cases the spleen becomes enlarged and tender during the first week. By the seventh day the mononucleosis is well marked; it increases until the eighteenth day, when it gradually subsides concurrently with a fall in the temperature and a disappearance of the glandular enlargement. Convalescence is rapid and uneventful. The disease has been mistaken for tuberculosis, typhoid, Hodgkin's disease, and leukæmia, while in a few cases syphilis has been suspected, but there is no evidence that infectious mononucleosis is at all related to any of these diseases. From leukæmia, to which it bears the closest resemblance, it is distinguished by the early and marked enlargement of the lymph glands, the absence of anæmia and purpura, and the histological and biological characteristics of the mononuclear cells, the predominant type of which is somewhat larger than the small lymphocytes and contains oval or reniform nuclei, usually without definite nucleoli. Whether infectious mononucleosis is identical with the glandular fever described by Pfeiffer cannot be decided until epidemics of infectious mononucleosis are reported or until cases of glandular fever are described in which the blood

[1] American Journal of the Medical Sciences, December, 1922.

picture differs essentially from that in infectious mononucleosis. Although a few specific infections such as typhoid, pertussis, malaria, Malta fever, and possibly tuberculosis, and intoxications such as those due to arsphenamine and carbon tetrachloride may produce a mononucleosis, the increase in the mononuclear cells in these cases is not very great, and is often insignificant compared with the considerable mononucleosis encountered in the condition under discussion. The ætiological agent is unknown. Although Blaedorn and Houghton, who found spirilla and fusiform bacilli in smears from the tonsils in three of their four cases, are inclined to regard the disease as a form of Vincent's angina, the clinical appearances in the throat do not correspond to the picture of Vincent's angina.

MENTAL HOSPITALS ADMINISTRATION: A NEW MENTAL TREATMENT BILL.

THE recommendations of the Committee on the Administration of Public Mental Hospitals, which were set forth in full in THE LANCET of August 12th, 1922, have been incorporated in a letter addressed to the visiting committees of these hospitals by Sir Frederick Willis, as chairman of the Board of Control. The most encouraging feature of his letter, apart from the cordiality with which the Board endorses the recommendations, is the incidental reference to the provisions of a Mental Treatment Bill which it is proposed to introduce this coming session. Facilities for the early treatment of cases of incipient mental disorder without certification are to be anticipated, and some enabling provision for after-care; it is intended also to include a clause whereby the combination of local authorities for any purpose, such as research or laboratory accommodation, may be regularised, while another clause will legislate for the co-option upon visiting committees of specially qualified persons who are not members of the local council. For the rest, the Board, in detailing the recommendations, have wisely discriminated between those which could be adopted without involving heavy financial commitments, and those for which it is manifestly inopportune to press in these lean years. Nine out of the fifteen recommendations are regarded as in the former class.

The suggestions as to the classification of patients with some regard to former surroundings, as to the posting of notices calling attention to the right of patients to send unopened letters to certain authorities, and the provision of letter-boxes for this purpose, are approved and passed on without comment. The recommendation that the superintendent shall be a medical practitioner, preferably with a diploma in psychological medicine, and not without general hospital experience, is warmly endorsed by the Board, who emphasise, in addition, the importance of insisting on high medical attainments and personal qualities, on organising ability, and on an appreciation of the use of laboratory adjuncts to treatment. Elsewhere in the letter the Board record their opinion that much more extensive use should be made in the ordinary routine of laboratory and other modern methods of diagnosis and treatment. Following a suggestion made, the Board have arranged for a small advisory committee to be at the disposal of any visiting committee who may desire to consult them in regard to the filling of vacant posts, which should be advertised. The appointment of a consultant staff to a mental hospital has the strong approval of the Board, who note with gratification that at most institutions the services, at any rate, of a dental surgeon are already available. With regard to assistant medical officers, the recommendations of the Committee do no more than reiterate the need for increased staff and for the provision of opportunities for study leave, emphasised by the Board in a circular addressed to visiting committees on March 3rd, 1920. In this circular the probable causes of the dearth of suitable applicants for these posts were outlined, the desirability of providing for the more effective treatment upon modern lines of recoverable cases insisted on, and the necessity for affording facilities to raise the standard of training for existing and future medical officers explained. As to the employment of patients, the question of authorising payment to patients doing useful work is under consideration; it is agreed that every endeavour should be made to provide patients with suitable occupation and to arouse their interest. Again, the Board agree that the importance of after-care can scarcely be over-estimated, and suggest that without waiting for the proposed legislation, voluntary effort in this respect should be encouraged—for example, by the formation of local branches of the Mental After-Care Association. The uniformly sympathetic attitude of the Board is well shown by the trivial nature of the only reservation made in forwarding the recommendations. While they agree as to the importance of drawing the attention of friends and relatives of patients to their powers (under Section 79 of the Lunacy Act, 1890) to make application for the discharge of a patient, they consider that this should be done in the rules as to visitation rather than by means of notices in the waiting-rooms as suggested. Arrangements for the visiting of patients by responsible people specially authorised by the local authority, as well as greater facilities for visits from friends and relatives, are also among those alterations which could be effected without much expense and with great advantage to the confidence felt by the public in mental hospital administration. Recommendations affecting the daily comfort of patients, such as the arrangements for daily toilet and the number of hours spent in bed, are specially commended to visiting committees.

As to the suggestions which would involve heavier expenditure, the limitation of the size of hospitals to 1000 beds, and the adoption of the pavilion system of buildings, need not, it is said, arise unless the building of a new institution or the enlargement of an existing one is contemplated. The remaining recommendations in this category deal with the nursing service and the dietary, and are being considered by special committees appointed by the Board of Control; a further communication will embody the results of these deliberations. The Board are giving careful consideration to the revision of the definition of "seclusion," as suggested by the Committee. Sir Frederick Willis's letter concludes with an appreciation of the helpful spirit in which the recommendations of the Committee were drafted. Indeed, most of them cover points which the Board have for some time been pressing upon the notice of local authorities. It is noticeable also how closely they coincide with the demands made at the Conference of Medical Superintendents and Representatives of Local Authorities called together in January, 1922. We commented favourably[1] on these and on the report of the Committee on Administration of Mental Hospitals when they were first issued, and need now add only our conviction that public confidence in the Board of Control will be greatly strengthened by their evident anxiety to use for the advantage of the patients under their care every particle of the present public interest in mental hospital administration.

Sir Charles Ballance will deliver a short appreciation of the Life and Character of the late Mr. Hunter Tod to the members of the Otological Section of the Royal Society of Medicine to-day (Friday) at 5 P.M.

Report 2 of the Industrial Fatigue Research Board, issued[2] to-day, deals with atmospheric conditions in cotton-weaving. It establishes the fact that operatives are exposed to atmospheric conditions which are physiologically unsatisfactory, although it does not dispose of the question whether conditions causing discomfort necessarily result in ill-health.

[1] THE LANCET, 1922, i., 188 and 243; ibid., 1922, ii., 343.
[2] H.M. Stationery Office. 2s.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

VII.

THE TREATMENT OF AURAL DISCHARGE IN CHILDREN.

CHRONIC aural suppuration, a too common condition, which is the direct cause of an immense amount of disability and of a considerable mortality, is nearly all preventable by simple treatment at the early stage of its acute onset, for it is always the result of the persistence of an acute otitis. The public in all ranks of life is sadly in need of education on this matter, and should be taught that an earache, and still more a discharge from the ear, is a sign of serious disease which, if not promptly treated, may result in permanent disability and danger. A woman once brought her baby to my out-patient department because, although it was teething, the ears had failed to discharge, and she thought that something must be wrong with the child to cause this departure from the normal course of events.

The chief causes of chronicity are secondary infection, re-infection, and lack of adequate drainage, and it is on this basis that treatment must be directed. The original source of infection is the entry of micro-organisms along the Eustachian tube from the naso-pharynx into the middle ear, and the infection is at first practically always with a single variety of organism; when, however, the tympanum opens through a hole in the membrana into a meatus full of cerumen, epithelial debris, and pus, secondary infection readily takes place, the discharge fails to clear up, and the suppuration becomes chronic. Again, repeated doses of infection may reach the tympanum through the Eustachian tube when the nose or nasopharynx are definitely unhealthy; this appears to be a less important cause of chronicity, for most cases of acute suppuration into a clean meatus will subside, and the drum heal, even though adenoids be present; though in such cases recurrence often recurs at a later date. Further, if there is any lack of free drainage, the bone beneath the very thin mucosa of the tympanum and antrum becomes diseased and the suppuration persists. In the earliest stage, or in mild cases of otitis, the secretion drains through the Eustachian tube; but when it is secreted too rapidly, or when the tube is blocked by inflammatory swelling, it is formed under pressure and earache results; usually the membrane gives way quickly and the pressure is relieved. In all cases of acute otitis media the antrum and mastoid cells participate in the inflammation and the mastoid is commonly tender on pressure during the stage of earache; usually they drain well, when the drum has perforated, and recover, but sometimes a block occurs at the aditus or at the neck of a mastoid cell which keeps up a chronic suppuration, and in rare cases even a mastoid abscess may form although the tympanum recovers and the perforation heals.

Treatment of Acute Suppurative Otitis.

Therefore the principles that should guide us in the treatment of acute suppurative otitis are to combat these factors which make for chronicity. As soon as a child complains of earache, the meatus should be cleared of wax and debris, if necessary by gentle syringing with warm 1 in 60 carbolic lotion, and antiseptic drops instilled every four hours; for this purpose the best drops are carbolic acid 25 gr., glycerine 1 oz., for they possess not only an antiseptic but a decidedly sedative action; the meatus should be filled with this solution, previously warmed, and the affected ear kept uppermost for three minutes; dry heat then should be applied to the side of the head in the form of a rubber hot-water bottle over a large pad of cotton-wool. Incision of the drum is a most valuable measure, which should always be performed early rather than late; it promptly relieves pain and stops the further progress of the disease. The drum should be incised as soon as it is found to be bulging or to present a bright velvety-red appearance, or even when severe earache and fever persist in spite of treatment for 24 hours without improvement. This little operation is quite easy, and is within the power of every practitioner, as it is practically impossible to do harm; a general anæsthetic is most advisable, but gas is sufficient as the mask need not be removed. Afterwards a narrow drain of gauze should be inserted into the meatus and a large pad of wool applied; the latter is changed when wet with the often profuse discharge, while the gauze is changed daily by the doctor; if such personal attention is impossible, the gauze drain may be removed after 24 hours and the carbolic and glycerine drops used. The discharge is at first serous or purulent, but later often becomes mucoid; it should be wiped away with aseptic precautions, but syringing conduces to secondary infection and is inadvisable. The pain should cease in a few hours after free discharge has been established, and the temperature should become normal within two days; if these two symptoms persist without improvement for more than three days, and especially if mastoid tenderness be present or if discharge has ceased, the antrum and mastoid cells must be opened without further delay, unless the perforation has closed, when paracentesis should be repeated. The treatment is the same if the case has not been seen until after rupture of the drum; but owing to the risk of secondary infection from the meatus, the longer the discharge has lasted before treatment, the more likely is it to become chronic. When a child first comes under attention with discharge a week old, with pain, fever, and mastoid tenderness, hot fomentations and three-hourly syringing with hot 1 in 60 carbolic lotion will often bring about a cure.

Two points about acute otitis in young children deserve mention; symptoms pointing to the onset of meningitis may be present, fever to 105°F., rapid pulse, delirium, retraction of the head and strabismus, but such symptoms may quickly disappear after the drum has perforated. Again, in infants especially, but also in children up to the age of 3, there are often no localising symptoms at all; therefore the ears should be examined in every case of unexplained pyrexia in small children. After spontaneous or surgical opening of the drum, the discharge is usually profuse, and may not reach its maximum until the second or third days; after a day or two more it normally then diminishes, and ceases with healing of the drum in two to three weeks. If it continue in greatly diminished quantity and with absence of other symptoms for a maximum of six weeks, it need not give rise to anxiety. But if, at the end of two and a half or three weeks from the onset, free suppuration persists and shows no sign of diminution, even though all other symptoms such as pyrexia, pain, or tenderness have disappeared, it is far wiser to open the antrum and mastoid cells. This operation, the simple antrotomy or Schwartze operation, does not damage the tympanum, on the contrary it may be relied on to produce immediate cessation of discharge with a healthy drum and normal hearing; whereas, if left alone, such a case will almost inevitably remain with a permanent perforation and damaged hearing. The antrotomy

wound may be stitched up, with or without a small drain, at the conclusion of the operation, and heals at once. I have been astonished, when operating on such cases, at the quantity of pus found in the mastoid cells.

Treatment at the Chronic Stage.

If the child is brought for treatment when the aural discharge is already chronic, a cure is, of course, far more uncertain; but even here most cases tend to get well if carefully treated, though a permanent perforation often remains, and in such cases discharge frequently recurs. The treatment is on similar lines to those of acute suppuration, careful mopping out of discharge followed by antiseptic drops. It is better to avoid syringing, though this is less dangerous than in acute cases; but it must sometimes be employed when the discharge is very profuse and when the mother cannot be trusted to mop out the meatus properly; I prefer a warm 1–60 carbolic lotion. But even in hospital work most parents can be taught to mop out the ear in a cleanly fashion with cotton-wool on a holder or a matchstick. The most valuable drops in chronic cases consist of boric acid 15 gr., rectified spirit ℥i.; they are sometimes painful at first and may be ordered diluted to half this strength for the early weeks of treatment. Considerable patience is needed and is often rewarded, for I have known ears to heal after two years' continuous treatment. Above all things it is necessary that no water from washing or bathing be allowed to get into the ear; it always makes these cases worse and often starts discharge from a dry quiescent perforation. Small granulations should be touched with a strong solution of nitrate of silver or with trichloracetic acid fused on a probe; larger granulations or polypi must be removed surgically. Rapid recurrence of polypi is an indication for the radical mastoid operation, as also are recurring attacks of earache; I do not propose to discuss at length the indications for operation in chronic otorrhœa, but it may be said that operation is not called for, at any rate in children, merely by persistent discharge, unless it remain very foul or profuse, and that better results are obtained by postponing the radical mastoid operation, when possible, until the child has at least reached his teens.

Unhealthy conditions of the upper air-passages have a most definite influence on otitis media; in children this usually means adenoids and chronic tonsillitis. Adenoids and tonsils should not be removed in the acute stage while there is fever and pain; but when these have subsided and discharge persists to the end of the second week, the removal of a pad of adenoids may cure the otitis and save an operation on the mastoid. All cases of chronic otorrhœa should be examined for adenoids, and these, even if only small, must be removed together with unhealthy tonsils; it is remarkable how often the ear will heal after this operation.

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SUMMARY OF PREVIOUS ARTICLES.

Previous articles in this series have appeared in THE LANCET as follows:—

Jan. 6th: I. The Medical Treatment of Gall-Bladder Disease, by Sir Humphry Rolleston.

Jan. 13th: II. The Treatment of Early Pulmonary Tuberculosis in the Young Adult, by Dr. Claude Lillingston.

Jan. 20th: III. The Treatment of Neuralgias of the Head and Neck, by Dr. Wilfred Harris.

Jan. 27th: IV. The Treatment of Whooping-Cough, by Dr. T. Izod Bennett.

Feb. 3rd: V. The Treatment of Scabies and Pediculosis, by Dr. H. W. Barber.

Feb. 10th: VI. The Treatment of Abdominal Injuries, by Prof. Charles A. Morton.

Special Articles.

PHYSICALLY DEFECTIVE CHILDREN IN LONDON.

THERE are some 42 schools for physically defective children under the control of the Education Committee of the London County Council, and in 1920 it was decided that there should be a medical survey of the pupils. Mr. R. C. Elmslie, orthopædic surgeon to St. Bartholomew's Hospital, was invited to undertake it so far as the crippled children were concerned, and his report[1] has just been issued. There were 2891 cripples on the rolls at the time of Mr. Elmslie's inspection and he examined 2294, the remaining 597 being absent for various reasons. One-third of the children were crippled by tuberculosis, affecting principally the spine, hip, or knee-joints. Over two-fifths were crippled by paralysis; of these the majority had suffered from infantile paralysis. One-twelfth had congenital defects, mainly club-foot and dislocation of the hip. The remaining one-fifth had various disabilities, in most cases due to rickets, amputation, or scoliosis. In Mr. Elmslie's opinion no fewer than 28 per cent. of these children required in-patient treatment in orthopædic hospitals. A further 9 per cent., who would be benefited by in-patient treatment, might be sent to a country home instead, provided they could be given out-patient treatment subsequently. Surgical instruments were required by 7 per cent., apart from the children whose appliances were under repair. For 1·6 per cent. permanent residence in an institution would eventually be necessary. For 54 per cent. nothing was required. With regard to tuberculosis, Mr. Elmslie mentions that he had made a similar survey of the crippled children in the L.C.C. schools in 1907, and he remarks on the improved condition of those suffering from tuberculous disease. He says he has little doubt that the improvement in the physical condition of children with tuberculous disease of the spine has resulted largely from the work done at the larger special country hospitals, more particularly the Treloar Hospital at Alton and Queen Mary's Hospital at Carshalton.

Infantile paralysis has now become the most important cause of crippling among children in London. The disease most often arises in infancy, the actual age of onset in 559 cases being as follows:—

Age of onset ..	1	2	3	4	5	6	7	8	9	10
No. of cases ..	211	168	87	50	26	3	7	3	1	3

In making provision for the treatment of this disease, therefore, it is necessary to provide for infants and young children, while almost all cases require the application of suitable splints or mechanical contrivances long before school age, and these may be wanted for many years, even throughout life. The common history of these children is one of years of attendance at an out-patient department, wearing instruments which are constantly broken and under repair, and getting deformities which require repeated admission to hospital for operation. Mr. Elmslie found that of the 758 children suffering from infantile paralysis, 305 required in-patient treatment, and that in 100 cases an instrument was desirable. This did not represent the number of children without appliances but only those who required an instrument which was not actually on order at the time of his visit. In some parts of London, especially in the East End among the patients of the London Hospital, as many as 50 per cent. of the children suffering from infantile paralysis were without their appliances at the time of his visit because they were broken and

[1] London County Council: Education. A Survey of Physically Defective Children. Report of the School Medical Officer, submitting Report by Major R. C. Elmslie. 1923. P. S. King and Son. No. 2201. 9*d*.

beyond repair. These children, although without instruments, were not included in the 100 abovementioned. It seems to him, therefore, that the treatment of infantile paralysis in London at the present time is very defective and that a better plan for attacking this, the most serious cause of crippling, is urgently needed. In a general criticism of the treatment of crippling conditions in children Mr. Elmslie expresses some doubt whether the schools for physically defective children are doing as much as they might as centres for the cure of cripples, and thinks the routine examinations should be made by orthopædic surgeons. He thinks also that the coördination of the schools with the local branches of the Invalid Children's Aid Association is not as close as it might be. He believes that expenditure of money on massage, remedial exercises, and electrical work at the schools would not be justified by the results. He thinks that additional accommodation is required for the treatment of tuberculous disease, and particularly of infantile paralysis in special institutions situated outside London. In his opinion it is desirable that any institution which may be organised for crippled children shall be coördinated with the London hospitals, so that children receiving in-patient treatment in the country institution may be transferred to the out-patient department of the appropriate hospital in London. It would be possible, he thinks, to secure such an adequate linking-up if the country hospital were coördinated with four or five of the large general hospitals, as well as with the Royal National Orthopædic Hospital and a few of the more important children's hospitals, and he concludes his report by emphasising the importance of this coördination.

Incidentally Mr. Elmslie makes some observations on the admission of tuberculous cases to the special country hospitals. The responsibility for the treatment of tuberculosis in London rests with the County Council, who are required to provide directly or indirectly such facilities for treatment as are necessary. The Council does not maintain institutions of its own for the purpose, but makes use of accommodation provided by other authorities, notably the institutions of the Metropolitan Asylums Board. For the treatment of non-pulmonary tuberculosis in children the Board has reserved a large section of Queen Mary's Hospital at Carshalton with its seaside branch at Littlehampton, as well as Princess Mary's Hospital at Margate, while St. Luke's Hospital, Lowestoft, was opened last year for adults. Mr. Elmslie in his report refers to the fact that many children with tuberculosis of joints are still admitted to Queen Mary's Hospital as Poor-law cases, passing through the infirmaries on the way to the country hospital. He regards this as regrettable because in some cases the parents object to making application through the Poor-law authorities, and in others the children are taken into the infirmaries and kept there for varying periods before being transferred to the country. On the other hand, he finds that a child reaches Carshalton more quickly by application to the Poor-law authorities than to the County Council. He suggests that the reason may be that the number of beds subsidised by the Council is limited, but Sir William Hamer in his introductory note states that no delay can have arisen on this account.

There is a general agreement that it is most desirable that there should be provided for patients with tuberculosis of the spine and the larger joints immediate orthopædic and nursing treatment in hospitals with country surroundings, with workshops capable of supplying the appliances required and with provision for heliotherapy and open-air life. Yet, as was pointed out by Mr. Gordon Pugh, chief medical officer of the Board's surgical tuberculosis service, in a recent address to the Society of Superintendents of Tuberculosis Institutions, there appears not infrequently to be considerable delay in applying for the admission of these patients to the Board's hospitals, and the cases are comparativeiy few which are received at Queen Mary's Hospital within three months of the disease being recognised. The experience at the Liverpool Country Hospital at Leasowe has been much the same, for during the three years, 1919–21, of 106 cases of spinal tuberculosis completed 55 had been admitted with abscess, sinuses, paraplegia, or marked kyphosis. It is possible that the facilities for treatment provided by the health authorities are not generally realised by surgeons and practitioners, and as a consequence cases of tuberculosis of spine and joints are not always notified at once to the borough medical officers of health with a request for treatment in an appropriate institution. It would undoubtedly be an advantage to the patients and an eventual economy to the taxpayers if such cases were admitted at once and directly into an institution specially equipped to deal with them.

MEDICAL SERVICE IN SCOTLAND, 1914–1919.

THIS record[1] of the Scottish Medical Service Emergency Committee during the war was prepared by Dr. J. R. Currie, a member of the Committee, until recently attached to the Scottish Board of Health, and now Professor of Preventive Medicine at Queen's University, Kingston, Ontario. Sir Alfred Keogh contributes a preface, in which he emphasises the special value of the account to a profession awakened to the important position it should occupy as an authority in State affairs, and pays a tribute to the great public services rendered by Dr. (now Sir) Norman Walker, convener of the Committee, throughout the period of the latter's existence.

Position on the Outbreak of War.

The immediate consequence of the mobilisation of the Forces in August, 1914, was the sudden withdrawal from civil practice in Scotland of about 300 medical men, most of whom held commissions in the Royal Naval Reserve or in the Royal Army Medical Corps, Special Reserve and Territorial Force, or in combatant units. The demands of the Admiralty and War Office for the temporary services of civilian medical practitioners were eagerly met by many younger men not yet in settled practice, so that the customary source for filling vacancies was almost completely cut off. In towns and populous areas many ex tempore arrangements were made, but a number of country areas lost their only doctors, and their need became urgent.

Formation of the Emergency Committee.

Dr. J. R. Hamilton, then chairman of the Scottish Committee of the British Medical Association, called a conference of members of the medical profession in Scotland to consider steps to relieve the situation; the conference met on August 12th, and appointed the Scottish Medical Emergency Committee "for the purpose of assisting to meet the immediate difficulties in regard to medical practice among the civilian population which have arisen or may arise owing to the departure of practitioners summoned to take up military duty." The Committee was composed, at its inauguration, of 15 medical men, seven of whom were appointed ex officio, while eight were elected by the conference. The seven ex officio members were the Presidents of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh, the President of the Royal Faculty of Physicians and Surgeons, Glasgow, and the Deans of the Faculties of Medicine of the Universities of St. Andrews, Glasgow, Aberdeen, and Edinburgh. Of the eight elected members, six were engaged

[1] The Mustering of Medical Service in Scotland, 1914–1919. By J. R. Currie; with Preface by Lieut.-General Sir Alfred Keogh, late Director-General of Army Medical Services. Copies may be obtained, post-free, on application to T. H. Graham, Librarian, Royal College of Physicians, Edinburgh. Price 3*s.* paper, 4*s.* 6*d.* cloth.

in general practice; of these, five—Drs. John Adams, G. C. Anderson, John Gordon, J. R. Hamilton, and John Stevens—were office-bearers of the British Medical Association, and the sixth, Dr. John Playfair, was President of the Medical Guild. The two other elected members were Dr. John C. McVail, deputy chairman of the Scottish Insurance Commission, and Dr. Norman Walker, Direct Representative for Scotland on the General Medical Council, and convener of the Committee. At its first meeting the Committee co-opted Dr. J. R. Currie, a medical officer of the Scottish Insurance Commission. The secretary of the Committee was Mr. T. H. Graham, librarian of the Royal College of Physicians, Edinburgh. The headquarters of the Committee were at the Royal College, and its field of enterprise covered the whole of Scotland. The Committee adhered to the 1911 Census as the standard for its calculations up to June, 1916; the population of Scotland, according to that Census, was 4,760,904, and the numerical summary of the profession published in the Directory gave 4032 as the number of practitioners resident in Scotland. A grouping of medical men according to their work gave the following figures: of a total of 3822 Scottish civilian practitioners on August 1st, 1914, there were 376 private practitioners, 1796 insurance practitioners, 248 consultants, 514 whole-time officials, 269 dental and retired practitioners, and 619 unestablished practitioners.

Early Work of Committee in Civil Sphere.

The early phase of the Committee's work was in the civil sphere, mainly relating to the filling of vacated general practices, with a view to maintaining the efficiency of medical practice so far as was compatible with the requirements of the army, and to safeguarding the interests of practitioners absent on military service. The maintenance of medical practice was the theme of the Committee's first memorandum to the medical profession, published in the Scottish press on August 19th, 1914. A number of spontaneous local undertakings by members of the British medical profession marked the early days of the war; these related to attendance on the patients of practitioners called away on active service—emergency medical bureaus being established at Dundee and other places—and to gratuitous medical attendance in Great Britain to the dependents of men on service, in coöperation with local relief committees and others. In Scotland, by the end of 1914, the Emergency Committee had overcome the most pressing difficulties with regard to single-handed areas; for instance, the army authorities, to whom representations had been made concerning territorial medical officers, issued in December instructions relating to exchange, substitution, or temporary demobilisation of such officers when a mobilised territorial unit was moved from its own locality, to enable the medical officer to remain at home, if necessary, in charge of his civil work. Reviewing the medical situation in Scotland at the end of that year, the Committee ascertained that of 1796 insurance practitioners, 162 were on active service; information with regard to other practitioners was less precise, but it was clear that a material shrinkage of numbers had taken place affecting all classes of practitioners engaged in active work. Faithful attention had been paid to the Committee's advice with regard to the cutting down of resident staffs of large hospitals and infirmaries.

Prevention of Indiscriminate Depletion of Medical Personnel.

In January, 1915, the Committee issued its second memorandum, dealing more particularly with the home interests of practitioners serving with His Majesty's Forces. In the same month the Council of the British Medical Association appointed a special committee to take such action in England, corresponding with that of the Emergency Committee in Scotland, as might seem advisable. Friendly relations were maintained throughout the war between the Emergency Committee and its English co-workers. In March the Director-General of Army Medical Services explained, in a letter addressed to the medical press, the position with regard to the employment of medical men for the army, and claimed the support and service of the medical profession. The Committee thereupon issued their third memorandum, calling the attention of the public to the great strain devolving upon many medical practitioners, proposing to educational authorities that some of their medical officers should be wholly or partially released in order to resume general medical work, and urging retired doctors and those on holiday from the medical schools to lighten the burden of country practitioners. Meanwhile, individual applications for commissions by medical men had increased as a result of the Director-General's letter. To prevent indiscriminate depletion of medical personnel, the Committee joined in an agreement with the War Office and the Scottish Insurance Commission, by which all names of Scottish medical applicants for military service were referred to the Commission, who conferred with the Committee and intimated to the War Office their approval of or objection to the applicant's employment with the army.

The Committee as a Recognised Recruiting Agency.

Later in the year the Committee was recognised by the War Office as a recruiting agency; the Insurance Commission withdrew, and the committee negotiated directly with the War Office. In April the special committee of the British Medical Association urged all divisions to devise means to free medical men willing to apply for commissions, and to make arrangements with local military authorities for part-time work with troops by civil practitioners. The measures proposed were promptly acted upon in Scotland. In May, at a second representative conference of the Scottish medical profession, it was resolved to provide before July at least 400 additional medical men for the army, and the Scottish Committee of the B.M.A. informed branches of the Association as to the quota expected from them; but in order that this activity might not seem to run counter to the purposes of the Emergency Committee the two bodies now conferred, and the Emergency Committee was entrusted with the records of the Scottish Committee, and with the duty of coördinating and organising the provision of medical officers for the army. The Committee therefore accepted the control of medical recruiting in Scotland with the approval of the War Office and the support of the B.M.A. Its main endeavour was the provision of temporary medical officers for the regular army; no general agreement with the navy or with the territorial force was made. The Committee adopted as its local administrative areas the divisions of the B.M.A., the four Glasgow divisions being counted as one. A general inquiry in May, 1915, showed that the ratio of population per general practitioner had risen since August 1st, 1914, from 2192 to 2576. In June, 1915, the Committee issued a fourth memorandum relating to the scheme for rapidly supplying 380 (reduced from 400) medical men to the army. One hundred were expected from among the graduates of July; this left 280 practitioners, who were summoned in three "calls," the final one in October. Certain rumours arose during this time attributing exaggeration of army demands, but these were quieted by a statement of the Committee giving the facts. The total output of medical men was 347 in lieu of the 380 asked for, the supply being close up to the actual demand.

The Committee under Lord Derby's Scheme.

At the end of 1915 the Emergency Committee became a recruiting authority in Lord Derby's scheme, with a status equivalent to that of a local recruiting committee, a field extending throughout Scotland, and a duty to canvass all medical men of military age within that field. The Committee was itself regarded as a tribunal for medical purposes, and at this period Prof. Robert Muir, professor of pathology, and Prof. T. K. Monro, Regius professor of the practice of

medicine, both of the University of Glasgow, were coöpted to membership. The Committee proceeded to compile a medical war register of Scotland. The total number of medical men on service had risen from 641 on May 15th to 1290 at the end of 1915. That is to say, one-third of the medical personnel of Scotland was by this time on service.

Supervention of the Military Service Act, 1916.

The 1916 recruiting scheme, announced in the Committee's sixth memorandum (December, 1915), came into effect on Jan. 1st and continued in being for about six months. The passing of the Military Service Act of the year modified the later stages of its working for practitioners of military age. Central control and local consultation were the principles of the scheme; 75 per cent. of the Scottish medical profession had returned forms under the scheme, offering whole-time or part-time service; a seventh memorandum pressing those who had not already replied to do so was productive of results. In March the Committee warned local war committees of a general call of 100 Scottish practitioners; the pace of supply was slower than heretofore as the means of filling vacancies became more difficult. The Military Service Act, 1916, took effect on March 2nd; medical men were exempt from the normal operations of the lay recruiting authorities under Lord Derby's scheme, and various other provisions had been made in recognition of the peculiar position of the profession, but at the end of February all medical men under the age of 41 were directed to attest. By Army Council Instruction No. 485 (March 3rd), the Committee's war register was assigned a definite function in the scheme of compulsory service, being recognised as a means of dividing practitioners into two classes: the registered, who were destined to remain in reserve until selected for a commission by the R.A.M.C.; and the unregistered, who were liable to be posted to units as laymen. The medical feature of the Military Service Act, 1916 (2), was its seventh section, which provided that claims for exemption by medical men should be dealt with by committees of medical men—a concession marking the special position of the profession.

On June 24th, on the termination of the Committee's 1916 scheme, its powers as Central Professional Committee for Scotland came into full operation. The statutory charge was superimposed on the voluntary recruiting still to be carried on, so that the Committee now had a dual function. Every practitioner who could be freed from civil work was to be so freed, and any practitioner returning from military duty was, if possible, to be replaced by a colleague from his district. Medical practitioners fell into three categories under the committee's range of duties: (*a*) Registered men under 41, (*b*) unregistered men under 41, (*c*) men over 41. Forty-seven claims for exemption were heard by the Committee before the close of the year; of these claims 22 were refused. In November the War Office urgently demanded as large a draft of medical officers as possible. Ninety-two medical men were immediately supplied. Up to the end of 1916, it may be said, 1800 Scottish medical men had taken service with the Forces of the Crown.

The Committee under the Ministry of National Service.

A conference, summoned by the Director-General of the newly-constituted Ministry of National Service, at St. Ermin's, Westminster, which met during March, 1917, recommended as follows: Compulsory medical service for members of the profession, independent of any general application of compulsion to the civil population; provision for remuneration of practitioners transferred by direction of a central executive, but not by payment of State salaries; central executives for England and Wales and for Scotland, and local organisation for purposes of professional mobilisation; appointment of a small medical service advisory board for Great Britain, representative of the central executives, for purposes of consultation with the Director-General of National Service or his deputy. The Government did not see its way to lay a special service on a selected group, however, although independent mobilisation of the medical profession would have received the effective support of the great majority of Scottish practitioners. Such a complete mobilisation was never carried out. In April, following the loss by enemy action of several hospital ships, the necessity for establishment of large hospitals overseas led to the calling up of all medical practitioners of military age. The Committee, anxiously observing the confusion threatened by this measure, disclaimed future responsibility for maintaining the general standard of civilian medical attendance. The Director-General informed the convener of the Committee that the army required 900 additional medical officers, and the Committee undertook to raise 200 officers in ten weeks' time; thereupon the general calling-up order was cancelled. At the end of 1917 the medical department of the Ministry of National Service became intermediary between the War Office and the Emergency Committee. National Service medical boards were instituted, their civilian members working part time in order to prevent complete withdrawal of any practitioner from his normal work. In December the Ministry of National Service circularised Scottish practitioners named by the Emergency Committee, calling upon all medical men who had resigned, or might resign, temporary commissions to resume the latter on expiry. Of 107 claims for exemption during 1917, 51 were not admitted. Meanwhile, certain changes had taken place in the personnel of the committee. Dr. A. D. R. Thomson, of Musselburgh, was appointed to the vacancy created by the death of Dr. J. R. Hamilton; Dr. Laura S. Sandeman, President of the Scottish Association of Medical Women, was coöpted to membership; Mr. J. W. B. (now Sir James) Hodsdon, President of the Royal College of Surgeons, Edinburgh, was also coöpted on the expiry of his ex-officio membership. At the end of the year the convener, Dr. Norman Walker, tendered his resignation of the chairmanship of the Central Professional Committee (to which Mr. Hodsdon was then elected) on account of his tenure of the appointment of Commissioner of Medical Services for the Region of Scotland.

Extended Age and Vocational Control: Special Position of Medical Profession.

The Military Service (Professional Committees Regulations) Order, 1918, placed the appointment of a Central Professional Committee for Scotland under the approval of the Minister of National Service; the medical profession was disjoined from the general body of citizens by a proviso of the Military Service (No. 2) Act, 1918, by which the medical military age was fixed as up to and including 55, as contrasted with 50 for men generally. This Order was superseded by the Military Service (Medical Practitioners) Regulations, 1918, which prescribed that there should be a special medical tribunal for Scotland for dealing with exemptions. The Emergency Committee was constituted as the tribunal, the convener being appointed chairman and continuing to hold his office of Scottish Commissioner of Medical Services. Thus the year 1918 saw two new claims on the medical profession—service up to 55 years of age and vocational control. Approved civilian service included, and was for most purposes equivalent to, substitutionary medical practice undertaken in order to liberate young practitioners otherwise indispensable. The Committee was of the opinion that the posting of medical men to the ranks, as a penal measure after non-compliance with regulations, might in some cases be warranted, but was inadvisable in the public interest. The first step in the Committee's 1918 scheme was the medical examination and grading of medical practitioners under the 1918 Act. A reserve of 45 men was created, available to render public service when requested. The 1918 scheme, however, was cut short by the general cessation of hostilities.

The Armistice: Demobilisation.

The new war register of the Emergency Committee showed that when the Armistice was granted to Germany 2439 Scottish civilian practitioners were serving or had served in the Navy, Army, or Air Force. The total number of civilian practitioners medically domiciled in Scotland on that register was 4281. Before the end of 1918 the committee forwarded the names of 188 practitioners to the Ministry of National Service, who, it was desired, should be released from military service on public grounds—chiefly owing to the influenza epidemic then prevalent in Scotland. A temporary check in demobilisation of medical men resulted from the great destitution in the recently occupied territories of France and Belgium, but progress had been made by the end of the year. At the end of March, 1919, the Ministry of National Service came to an end, and the Committee resumed direct touch with the naval and military authorities. Near the end of May, 403 practitioners had been released, and 594 had been nominated for release, 191 remaining outstanding. From June onwards the Committee concentrated on cases qualified for release by long service or personal hardship. In November the Assistant Director-General of Army Medical Services informed them that a roster of all names of medical officers had been compiled for purposes of release by general officers commanding expeditionary forces and commands, and that no further orders regarding the release of individuals could be issued from the War Office, although cases of extreme hardship might be brought before the general officer commanding-in-chief. By December, 1919, the number of Scottish practitioners remaining in the army was unsubstantial. Future releases were to conform strictly to military procedure, and the Emergency Committee, having no further service to render, dissolved on the 31st of that month.

The above summary of the contents of Dr. Currie's compilation, while necessarily short, makes it clear that among the medical profession in Scotland the voluntary principle may be said to have survived in substance until the Armistice. Dr. Currie justly claims that the work of the Emergency Committee, which derived its sanction solely from the tacit or expressed approval of the profession, gave evidence of the confidence reposed in the profession by the general public, which must be presumed to have believed that no lay body could exact more from the profession in war-time than the profession was prepared to exact from itself. The volume contains many illustrative tables; the tabular records up to 1916 are derived from contemporary counts employed or made by the committee for recruiting purposes. Of the remaining tables most are based on an examination of the committee's new war register, prepared by the committee in 1918, for its recruiting scheme of that year, and employed after the Armistice in connexion with demobilisation. From Table XIV. we learn that of the 362 deaths of Scottish civilian practitioners from August 2nd, 1914, were as follows: service deaths, 133 up to Dec. 31st, 1919; civil deaths, 229 up to Nov. 11th, 1918. As Sir Alfred Keogh states in his preface, the record of the earlier years of the committee's work, when the Scottish organisation was founded upon a purely voluntary basis, reflects even more distinction upon the medical profession in Scotland than the subsequent or "official" period; and the part played by Scottish medicine in the war is worthy of careful study, if only because of the lessons to be learned from it. "Those of us," he writes, "who have served in the Royal Army Medical Corps and have grown accustomed to the struggle for medical autonomy in relation to military affairs, may conclude from the course of certain transactions recorded in these pages that a not dissimilar movement may one day be believed to be possible in civil medicine. There can be no better example of how much administrative ability and business capacity are locked up in the profession of medicine than the history of its voluntary work in Scotland."

Public Health Services.

THE CONSOLIDATION OF PUBLIC HEALTH ACTS.

Two years ago an Education Act was passed which superseded all the complicated and overlapping education statutes of the past half-century. The result was a well-arranged code containing in a single document the whole law of school attendance, employment of children, and school maintenance and management; in fact everything that parents and magistrates and educational administrators want to know. When will the same simplifying process be applied to our public health law? The Acts are not less numerous and not less complicated; they too, as the Education Acts did, go back for half a century. It would be a great boon to hard-worked medical officers and to those citizens who interest themselves in public health administration, if there were only one Act to handle and understand, and if that Act contained a logically arranged statement in place of the present scattered collection of amending, extending, and overlapping enactments.

Experts in the science of law-making have declared that sequences of statutes like the Public Health Acts or the Housing Acts should be consolidated into a single Act every ten years. If we ask them why this ideal is never attained, we are referred for answer to various frailties of mankind. The politician, it seems, takes no interest in consolidating Acts because they catch no votes. They are unpopular, it appears, with text-book writers and legal practitioners who have mastered the confusion of the existing law and thereout suck no small advantage. The average Member of Parliament, it is said, will sometimes tolerate a consolidating Act if he is assured on good authority that it contains no new law and if he is in a hurry to get home to bed; but more often he wants to distinguish himself by inserting improvements of his own and by introducing controversial amendments which result in wrecking the whole measure. As an instance of this tendency we may refer to Lord Birkenhead's proposals to consolidate the Judicature Acts and thus to bring into the compass of one methodically framed Act the whole law of the constitution and procedure of the High Court of England. The Probate, Divorce, and Admiralty Court, it seems, will have to be omitted from its place in the scheme because enthusiasts would never be able to resist the temptation to bring up the whole question of divorce law reform, which would destroy all chance of the measure passing into law.

Would the same danger attend an attempt to consolidate the law of public health? Health as a general topic is highly attractive to faddists, and it is certainly true that our existing Public Health Acts are susceptible of improvement. As we lately observed, progressive town councils have to spend the rate-payers' money in obtaining various public health powers which ought to be given to all local authorities by the law of the land. The House of Commons has a Select Committee on local legislation. Year after year this Committee recommends that the provisions which are common to so many Local Acts should be inserted in a general Public Health Act. The Committee's report for 1921 gave a list of them. They included clauses for the closing of Sunday schools during epidemics, the cleansing of filthy premises and verminous persons and houses, sanitary restrictions on the sale and storage of food, ice-cream regulations, the provision of street orderly bins, and the removal of tuberculous patients to hospital. Besides urging that these provisions ought to be in a Public Health Act instead of in Local Acts, this Committee has repeatedly recommended the course for which we are now contending—namely, the consolidation of the Public Health Acts of 1875 to 1907. To obtain the ideal code of public health law the best way would be to have two new Acts. The first should be a short amending Act to give the

whole country the benefit of the latest approved developments in Local Acts. When that preliminary measure is safely passed, it should be followed immediately by a consolidating Act which would reduce the whole of the then existing public health law into one clearly expressed and properly arranged document. It may be hoped that the Minister of Health will give this matter his earnest attention.

"SCANDAL OF PANEL TREATMENT."

Under this emphatic heading a daily journal asks readers "who have grievances or who know of hard cases" to communicate with them—and we agree that this might be to the good if sufficient space is given to answers and corrections where grievances are found to be based on false foundations. Such a publicity campaign would clear the air. But the journal opens with certain misapprehensions. The statement: "Many doctors have treated panel patients very badly and very differently from the way in which they have treated their private patients," is supported by the allegation that "in London alone 400,000 people who are entitled to free medical attendance have refused to choose a panel doctor, and prefer to pay for medical attendance as private patients." We have no hesitation in challenging this statement, and we wonder where the writer has got his figures. Perhaps he refers to the insured persons who are allowed to make their "own arrangements"—but there were only 2300 of these in London when the count was taken on Oct. 1st, 1922. It may be that the writer has taken his figures from the count of the index and medical registers of the London Insurance Committee given in the agenda of a recent meeting. Now it is well known that the excess of the index register over the medical register is largely due to "inflation" in the course of registration, this inflation being caused by double entries on admission to insurance and delayed deletions on their "ceasing to be insured." Anyone cognisant with the registration system knows that this inflation does not represent living persons. The census figures show that there could not be such a number as two million insured persons in the London county area. The insured population, which is usually about one-third of the total, could scarcely be more than 1¼ millions. The statement, therefore, is based upon a gross error.

It may be admitted, however, that a certain number of insured persons do go to private practitioners and pay fees. This is due, on the one hand, to the fact that in London there exist a certain number of non-panel doctors who, being hostile to the Act, persuade patients that they get better treatment by attendance as private patients; and, on the other hand, to the idiosyncrasies of the patients themselves. Many insured persons cannot be disabused of their conviction that they get better medicines from the doctor, and hence are unwilling to go to panel chemists to have their prescriptions dispensed. We hope our contemporary will collect some authentic instances of "scandal"; they would then be fearlessly examined by insurance committees and their medical service subcommittees. For it is evident that any practitioner who is shirking his responsibilities is thereby taking unfair advantage of his colleagues and should be brought to task for it. Our contemporary indicates a recent case where this was done and the doctor fined. It then goes on to quote a statement by Sir Kingsley Wood that the volume of complaint concerning the present service is increasing. No one knows better than he that there is a tribunal for dealing with these complaints, and his help would be valued if he would set himself to explain how the questions can be dealt with by insurance committees. The difficulty of the lock-up surgery in slum areas, for instance, can be remedied by energetic action on the part of insurance committees. Improvement cannot be obtained by mere tightening up of regulations. Definite complaints must be made and the sinners convicted and brought to repentance.

Correspondence.

"Audi alteram partem."

TRACHOMA IN THE NEAR EAST.

To the Editor of THE LANCET.

SIR,—I have seen the annotation in THE LANCET of Oct. 7th, 1922, with this title. As I have trained some of the medical officers and staff for the Palestine Government I thought it well to write to my friend, Colonel G. W. Heron, A.M.S., Director of Health, Palestine Government, on a point in his excellent annual report for 1921, with which I am not in agreement. I wrote as follows:—

"There is one point in your report, mentioned in THE LANCET for Oct. 7th, p. 773, and having reference to the causation of blindness by trachoma, from which I dissent. On p. 60 of your report you say, 'It accounts for the majority of the cases of blindness so common in this country.' A careful examination of the history in nearly every case of blindness the result of conjunctival disease will show that the deciding factor has been the superimposition on the trachoma of an acute or a chronic attack of bacterial conjunctivitis, due to the gonococcus, or the Koch-Weeks bacillus. This may perhaps sound to you to be an unimportant detail, but I teach that until this is fully understood a real comprehension of trachoma cannot be obtained. I do not deny that trachoma may in certain ways be a cause of blindness (see 'Trachoma and Its Complications in Egypt,' p. 62), but it is not proportionately very common."

Colonel Heron has since written to me expressing his complete agreement with my observation above.

I have read the report of the Trachoma Clinic conducted at Pelham, Georgia, U.S.A. This seems to me the earnest effort of a not very scientific practitioner. It is a pity that he did not study the article on trachoma in the "American Encyclopedia of Ophthalmology" before he wrote his report. I have also seen the article which you published in your issue of Sept. 30th, 1922, by Ticho and Kligler of the Zionist organisation, and Ticho's methods of diagnosis do not appear to be very comprehensive.

In a trachomatous country no case can be pronounced to be free from infection until the cornea has been examined by focal illumination and a good Zeiss loupe of 10 magnification, which shows the vessels of trachomatous pannus running into the clear cornea. Ticho does not mention this in his scanty enumeration of the diagnostic signs of trachoma. What an acute papilla is I have no idea, but the statement that "gonococcal infections when mixed with trachoma protect the eyes from blindness by the appearance of acute pannus" is unsound. The origin of the statement is, I suppose, that I have written about the action of vascularisation of the cornea in protecting the epithelium during the course of an acute conjunctivitis; I am not aware that anyone else has done so. The director of the Medical Service of the Zionist organisation is in regular receipt of my annual reports.

Kligler's statement that there is no increase of trachoma during the summer epidemics of acute conjunctivitis is contrary to experience in a trachomatous country. The most common way in which trachoma is transmitted is by the occurrence of an acute conjunctivitis the result of the transference of contagious material from a trachomatous subject who has been attacked by a Koch-Weeks infection. Then after a varying period, which may be extended to some months, it is found that trachomatous granulations are present.

As regards the question of diet, I was asked by the Rockefeller (International Health) Commission to treat cases of acute conjunctival disease by dietary methods only. I entirely refused to do this, as we have methods of treating the condition which, when properly applied in the out-patient departments, reduce the danger of ulceration to very small proportions, where treatment is commenced before the epithelium is damaged. As regards the influence of diet on trachoma,

it is well known that trachoma attacks the conjunctiva of the children of the better-fed classes with as great readiness as the conjunctiva of the children of the starved classes, when the contagious material is present in the conjunctival sac of the mother or of the nurse; bearing in mind, of course, that every kind of infection is thrown off less readily by a badly nourished than a well-nourished organism.

I am, Sir, yours faithfully,

A. F. MACCALLAN.

Department of Public Health, Cairo, Jan. 29th, 1923.

MECHANICAL TREATMENT OF SEVERE DROPSY.

To the Editor of THE LANCET.

SIR,—With reference to a note on this subject by Dr. J. Walter Carr and your editorial note thereon, appearing in THE LANCET of Dec. 2nd, 1922, I wish to take this opportunity of putting on record the following:—

I have been carrying out the simple method of drainage described in the note for over four years now. Having realised the risks that patients run of getting Southey's tubes introduced into their tissues or long incisions made, I hit upon the simple plan of puncturing with a straight surgical needle, and have had resort to the procedure on many an occasion. I have made punctures in subjects suffering from various diseases, such as heart disease, acute nephritis, deficiency œdema, œdema due to extreme secondary anæmia, &c. In fact, it is obvious that the method can be resorted to in all cases where indications for drainage of fluid from tissues exist. Of course, the usual measures should always be given a fair trial, and when swelling does not decrease in a reasonable period of time punctures should be made. The danger of allowing dropsical accumulations to go on increasing must be evident to all clinicians, and failure to produce any impression on such accumulations by the usual therapeutic measures is, I am sure, also within the experience of most. Under such circumstances it is clear we should have resort to some mechanical measures.

I quite agree with Dr. Carr with regard to his experience of "papers of candidates," and also agree with him in his opinion that "the simplest and most effective method of treating severe dropsy . . . is not taught or practised to any large extent." But the reason for these is not far to seek. There is no mention made of such a method in any of the text-books on medicine! There are probably many who like myself practise the method, but so far it has not been put on record. Now that Dr. Carr has written his note, it may be expected that this simple measure of treatment would receive the publicity it so richly deserves, if not even find a place in the future editions of text-books on medicine. Personally I have always felt that the method was so simple and so trivial that in all likelihood it was used by many medical men, and that in any case it did not deserve to be raised to the dignity of being published in any well-known medical journal. But there is really nothing too trivial or too simple from the point of view of bringing benefit to the patient, and I can safely assert that in cases in which I have resorted to it it has really proved to be a life-saving measure.

The technique described by Dr. Carr is just exactly what I also follow except in one minor particular. He makes punctures only over the feet, but it has been my practice not to limit these to the feet only, but also puncture the legs, the thighs, the scrotum in men, and even the lateral aspects of the abdominal wall. These regions are also œdematous in most cases, and punctures over them help to drain the fluid quicker. There is certainly no element of risk in including other regions in the operation than only the feet. The amount of fluid that drains away is sometimes enormous, and in one case of cardiac failure due to mitral stenosis, which was under my care during July, 1921, as much as 20 pints could actually be collected and measured! We may take it that at least half this quantity soaked through the dressing, &c., and could not be collected. What strikes me as a most noteworthy feature about this therapeutic measure is the rapidity with which patients improve once fluid begins to drain away. From a hopelessly water-logged condition and a state of alarmingly increasing dyspnœa, the patient is brought into a state of comparative comfort and safety within such a short time as 24 to 48 hours, and ever after the course to relief and sometimes to cure is smooth and uninterrupted. Not only do drugs begin to act as noted by Dr. Carr, but the kidneys, which up to the time of punctures absolutely refused to eliminate fluid, begin to excrete enormous quantities of urine day after day till the whole anasarca disappears. By adopting this measure we appear to effect a breach at the right spot in the vicious circle in the grip of which the patient is so helpless. It seems undoubted that, left to itself, the termination of such a circle, in almost every case, can only be in death.—I am, Sir, yours faithfully,

B. SANJIVA RAO,

Physician, Government Royapuram Hospital, and Lecturer in Medicine, Royapuram Medical School.

Madras, Jan. 10th, 1923.

THE ACTION OF VACCINES.

To the Editor of THE LANCET.

SIR,—I am indebted to Dr. David Thomson for his concise summary, in your issue of Nov. 18th, 1922, of the data on which is founded his belief in the advantages of the method of preparing vaccines named by him the "detoxication" process. But these data do not answer the query in my letter of Nov. 4th. In the matter under discussion we are *not* concerned (1) with the question as to whether "detoxicated" vaccine is superior to ordinary vaccine; (2) or with investigations of a general nature into the chemistry of proteins; (3) or with the alleged advantage of large doses over small doses of antigen in producing the formation of antibody. I am obliged to conclude that Dr. Thomson is unable to bring forward conclusive evidence in refutation of the statement that the "detoxication" process enormously weakens the antigenic value of vaccine.

In my article of Oct. 7th frequent reference was made to the anaphylactic nature of the local, focal, and general reactions following the administration of *minute* doses of vaccine. These reactions, which I have closely studied for some years, are highly specific and are elicited only by the actual antigenic substances in the vaccine. The exhibition of a large dose of antigen in an anaphylactic patient produces serious and even dangerous local, focal, and general reactions. I have used the "anaphylactic test" (as I have named it) as a means of measuring the antigenic value of vaccine, and I regard Dr. Thomson's admission of the absence of severe reactions or harmful effects following the administration of enormous doses of "detoxicated" vaccine as satisfactory proof that the antigenic value of the original vaccine has been enormously reduced by the process of preparation.

I have refrained from criticism of the data on which Dr. Thomson relies in order not to obscure the one point at issue by general discussion.

I am, Sir, yours faithfully,

J. PRATT-JOHNSON.

*** We have referred Dr. J. Pratt-Johnson's letter to Dr. D. Thomson, who replies as follows: "The antigenic value of detoxicated vaccines has been proved by well-recognised and laborious immunity tests in the laboratory. They have also stood the test clinically. Dr. Pratt-Johnson has at last made it clear how he arrived at the conclusion that the detoxicated process weakened the antigenic power of a vaccine at least one hundred times. I had wondered if he had arrived at this opinion after a series of recognised accurate tests, but now it is evident that he has come to his conclusion with extraordinary facility. He has developed in his imagination a new

law of immunity—viz., that antigenic efficiency is directly proportional to the reaction produced, and he considers that the reaction is an anaphylactic phenomenon. The detoxication process renders vaccines at least one hundred times less toxic, therefore according to Dr. Pratt-Johnson's new law a simple arithmetical calculation shows that they are at least one hundred times less antigenic. I venture to believe, however, that the laws of immunity and anaphylaxis are not quite so simple as that."—ED. L.

THE LATE DR. J. W. BALLANTYNE AND ANTENATAL WORK.

To the Editor of THE LANCET.

SIR,—I am glad to see that in the obituary notice of Dr. J. W. Ballantyne in THE LANCET of Feb. 3rd attention was called to his efforts for the promotion of antenatal work. For many years Dr. Ballantyne was crying in the wilderness. But his confidence was justified and his pioneer work became an accomplished fact. He began by holding one weekly clinic, but at the time of his death four well-attended clinics were held every week. Follow-up work is studiously carried out at these and valuable clinical teaching afforded to the medical school. From a preventive aspect Dr. Ballantyne's work was of immense value, and in all administrative steps he walked in perfect harmony and coöperation with our very comprehensive municipal child welfare organisation. Dr. Ballantyne's very thorough work and persistent efforts in antenatal work will never be forgotten.

I am, Sir, yours faithfully,

WM. ROBERTSON,
Feb. 5th, 1923. Medical Officer of Health, Edinburgh.

THE PREVENTION OF HEART DISEASE.

To the Editor of THE LANCET.

SIR,—The interesting dissertations on heart affections in THE LANCET of Feb. 3rd impel me to offer a few comments.

In the first article by Dr. F. J. Poynton we are told that "we cannot at present, from clinical observation, tell when a cardiac valve is soundly healed." The inference is that we cannot tell in many cases when the valve is diseased. Does this incapacity on our part matter? Drs. J. Cowan and J. K. Rennie tell us that in 19 cases out of 81 in which valvular affections were present death was due to other factors, whilst in 39 others an additional endocarditis had to be introduced to aggravate the cardiac condition before death ensued. Drs. Cowan and Rennie state that in paroxysmal tachycardia cardiac failure occurs on account of the simultaneous contraction of auricles and ventricles, yet agree that heart-block may exist for ten years without serious complications. They argue that in heart-block synchronous contraction may occur but only occasionally. Surely if the "contraction" of the auricles is of any import even in a 2 to 1 heart-block, one or other of the auricular contractions must occur when the ventricle is in contraction.

In my opinion this forcible contraction is overrated; the chief function of the auricular fibres is to keep the blood properly reservoired in a taut organ anticipatory of the ventricular action. This tautness is assisted by the support obtained from the negative intracardial pressure, and my experience has been to find at post-mortem examinations of all cases of heart failure that this pressure has become atmospheric. Dr. Poynton objects to calling tendencies diseases, but a man is made up of tendencies, and without a man disease does not exist.

If, as you rightly point out, prevention is of fundamental importance, then our energies should be directed to investigating thoroughly all those factors which go to the making of a constitutional tendency. To do this, however, we require the coöperation of everybody who is interested in medicine and sanitation; of the general practitioner as well as the specialist, of the educationist as well as the member of every local health committee. Clean, wholesome food, handled by healthy persons in a cleanly manner, is essential both directly and indirectly for the good of the people, but to do this we need to place our educational methods on a satisfactory basis.

I am, Sir, yours faithfully,

Swansea. G. ARBOUR STEPHENS.

A TECHNIQUE OF SPINAL ANALGESIA FOR LAPAROTOMY.

To the Editor of THE LANCET.

SIR,—In further reference to the topic raised in your columns on Jan. 20th by Dr. S. A. Lane, and commented upon by my old friend Dr. C. F. Hadfield in your issue of Feb. 3rd, may I say that at the suggestion of Mr. Percival Cole I was using this combination of hyoscine with spinal anæsthesia at the Cancer Hospital in 1916? Quite probably we had been anticipated by others elsewhere, but at any rate we can claim to have been among the early workers in this field of anæsthesia.

I am, Sir, yours faithfully,

HENRY ROBINSON.

Bramham-gardens, S.W., Feb. 8th, 1923.

PARATHYROID AS A PROPHYLACTIC.

To the Editor of THE LANCET.

SIR,—Since March, 1922, I have been investigating the effect of parathyroid as a prophylactic for nasal and aural discharges following an attack of scarlet fever. In the small fever hospital of which I am medical officer a vast amount of expense and trouble has been caused by delay in discharging scarlet fever cases owing to the onset and persistence of such discharges. I first tried the effect of calcium lactate by the mouth without results. Since using the parathyroid, however, one case only has developed a discharge (nasal). This ceased within ten days. I have not yet had an opportunity to work out the statistics, and in any case the figures of such a small institution as ours would be quite inconclusive. I intend, however, to persist until I have collected a much larger number of cases, and in the meantime I shall be pleased to hear from any other who is investigating the subject.—I am, Sir, yours faithfully,

A. GORDON WILSON, M.B.,
Medical Officer, Penistone Isolation Hospital.
Feb. 2nd, 1923.

DIAGNOSES ON HEALTH INSURANCE CERTIFICATES.

To the Editor of THE LANCET.

SIR,—I should like to draw attention to the way in which National Health Insurance certificates are treated with regard to diagnoses. On several occasions patients have returned and asked me to change the diagnosis on their certificates or payment will not be given. In these cases my diagnosis frequently was "cold in the head," and in each case when I changed it to "coryza" or "nasal catarrh" payment was allowed. I would like to know the cause of this, and why also such diagnoses as "debility" and "anæmia" are refused. In a large number of cases which occur in panel practice it is impossible to make an accurate diagnosis at the time the first certificate is given, and both these terms are very often the best way of describing the condition present, instead of labelling the patient with a spot diagnosis which may prove wrong afterwards. These terms may not be very precise or descriptive, but surely they are on an equal standing with such diagnosis as "injury to limb," which is frequently given and accepted.

I am, Sir, yours faithfully,

Worksop, Notts, Feb. 5th, 1923. BEAUFORT BURKE.

THE CASE OF MADELEINE SMITH.

To the Editor of THE LANCET.

SIR,—I have read with interest the paper by Sir William H. Willcox in your journal of Jan. 27th. On p. 167 the author states that Madeleine Smith was condemned to death in 1857. Reference to a description of the evidence in "Report of the Trial of Madeleine Smith, 1857," by Alexander Forbes Irvine, advocate, states that the verdict was: (1) Not guilty on first charge; (2) not proven on second charge: (3) not proven on third charge. She was discharged.

I am, Sir, yours faithfully,

T. W. LOVETT.

Lower Broughton, Manchester, Feb. 2nd, 1923.

"LUNACY REFORM."

To the Editor of THE LANCET.

SIR,—The Executive Committee of the Lyceum Club have received complaints from members of the manner in which the "Lunacy Reform" dinner on Jan. 24th was conducted. They feel they must offer an apology to the many distinguished guests who were invited to a dinner to hear an address on a contentious subject without notice having been given beforehand or any adequate opportunity afforded for replies from those who held other views. The organisation of the dinner was in the hands of a very few members, who were entirely responsible for the arrangements. The members of the Executive can only regret the blunder and apologise for discourtesy which was certainly not intended.

I am, Sir, your faithfully,

H. L. GUY,
Lyceum Club, Piccadilly, W., Feb. 6th, 1923. Secretary.

Obituary.

JOHANNES ORTH,

PROFESSOR OF PATHOLOGICAL ANATOMY IN THE UNIVERSITY OF BERLIN; DIRECTOR OF THE CHARITÉ CANCER INSTITUTE.

Johannes Orth was born at Wallmerod, a small village in what was then the Duchy of Nassau, and was the son of a doctor. Orth studied at Heidelberg, Würzburg, and Bonn. He qualified in 1871, and became assistant to his relative E. Rindfleisch, and later for five years to Virchow. He then went to Berlin, where his duties included the teaching of histology as well as pathological anatomy; a late outcome of this period of his life was an excellent manual on histology. His appointment to the chair of pathology at Göttingen was at first unpopular, since his brusque and decisive manner formed a contrast to that of his urbane predecessor, Emil Ponfick. However, he soon achieved success as a teacher and organiser, as well as esteem for his original work. He built a new institute, and wrote works on general and special pathology that remained classical reference books for many years. On the death of Virchow in 1902 he was called to succeed him as director of the Berlin Pathological Institute. Here also he created a new institute and reorganised the teaching, and yet found time for other activities on wider medical lines. He became a member of the Akademie der Wissenschaften, of the senate of the Kaiser Wilhelm Institute, chairman of the Central Committee for Cancer Research, and of the Berlin Medical Society. He worked for the institute he directed with increasingly successful results until, in 1915, he became ill and had to submit to operation, happily not for the carcinoma of the gall-bladder from which he had believed himself to be suffering. In 1917, at the age of 70, he resigned his teaching work, not on grounds of ill-health, but of increasing age, and he recovered speedily from the occasional attacks of biliary colic from which he suffered; subsequently he took great interest in the progress of the inflammation of the gall-bladder and liver which he diagnosed as his complaint, and according to Dr. O. Lubarsch[1] the post-mortem lesions corresponded with his prophesies. Johannes Orth was one who saw clearly, was conscientious, punctual, and precise in all that he undertook. He inspired respect and admiration even from those who feared his sharp incisive way of disposing of problems too much to seek his advice. In his relations with his family and chosen friends he showed his sensitive and loyal nature. His influence on the pathological outlook of our own time was widespread. his pupils including Aschoff, Kaiserling, Gaylord, Fibiger, and many others whose names are famous. He taught accuracy, thoroughness, and breadth of view, and his work will not soon be forgotten.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. W. H. Pope is placed on the Retd. List with the rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

E. E. D. Gray (late Surg. Prob.) to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. A. E. Hamerton is appointed Assistant Director of Pathology in succession to Lt.-Col. D. Harvey, Deputy Director of Pathology, who relinquishes temp. rank of Col.

Maj. A. H. Bond is placed temp. on the half-pay list on account of ill-health.

Capt. Carl K. G. Dick retires, receiving a gratuity, and is granted the rank of Maj.

ARMY RESERVE OF OFFICERS.

Army Dental Corps.

Capt. C. C. Marston, late Spec. List, to be Capt.

ROYAL AIR FORCE.

H. E. H. Tracy is granted a temporary commission as a Flight Lt.

Medical News.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on Jan. 24th it was announced that Dr. E. H. Starling had resigned from the Jodrell Chair of Physiology at University College, on his appointment as Foulerton Research Professor of Physiology. It was resolved to institute a University Readership in Cultural Anthropology tenable at University College.

Closing of the Physiological Laboratory.—It was resolved: (1) That after the end of the present session no University funds be devoted to the continuance of the Physiological Laboratory; (2) that negotiations be entered into with one or more colleges or schools of the University in order, if possible, to transfer members of the staff of the Physiological Laboratory at South Kensington to the staffs of other physiological laboratories; (3) that the Physiological Laboratory Committee be authorised to negotiate for the disposal of the laboratory apparatus, including fixtures and furniture, belonging to the University.

University Studentship in Physiology.—A University Studentship in Physiology, of the value of £50 for one year, will be awarded to a student qualified to undertake research in physiology, and will be tenable in a physiological laboratory of the University or of a school of the University. Applications must be received by the principal officer on or before May 31st, 1923. Full regulations for the award of the studentship may be obtained on application.

Publication Fund.—A small publication fund has been instituted for the purpose of facilitating the publication of (1) advanced lectures given at the University, (2) students' theses, (3) the results of research by members and teachers of the University. Assistance may take the form of a grant towards the expense of press work (including "offprints") or illustrations, or both.

Lectures on Mental Deficiency.—In accordance with a request from the Council of the Central Association for Mental Welfare, it has been decided to hold a course of lectures on mental deficiency for medical men at the central buildings of the University from May 28th to June 2nd, 1923, the arrangements being made by the Council of the Association in consultation with the University Extension Board.

[1] Medizinische Klinik, Feb. 4th.

UNIVERSITY OF BIRMINGHAM.—The annual meeting of the court of governors was held on Feb. 8th, the Vice-Chancellor, Sir Gilbert Barling, presided. In the course of his address the Vice-Chancellor drew attention to the scheme for research in mental diseases under the joint auspices of the University and the Asylums Committee of the city. He regarded this scheme as a most promising and valuable one. Prof. Grant Robertson also spoke, appealing for increased support from local authorities in the Midlands for the University.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary Council meeting was held on Feb. 8th, Sir Anthony Bowlby being in the chair.—A report was read from the Court of Examiners respecting candidates found qualified for the diploma of Membership, and diplomas were granted to 135 candidates mentioned in the report.—A report was read from the secretary to the Conjoint Examining Board respecting candidates found qualified for the diploma in Ophthalmic Medicine and Surgery, and diplomas were granted to 13 candidates mentioned in the report.—It was recommended that an afternoon reception be held at the College on June 6th for the delegates attending the 800th anniversary of the foundation of St. Bartholomew's Hospital, and that a conversazione be held on the evening of July 19th for the Members of the Congress of the International Society of Surgery.—The President reported that he had given Sir Arthur Keith, the conservator of the Museum, extension of leave till Feb. 24th, and that his Hunterian lectures would be delivered on March 5th, 7th, 9th, 12th, 14th, and 16th. The subject of the lectures will be "Man's Posture—Its Evolution and Disorders."—Mr. W. G. Spencer had been appointed Bradshaw lecturer for the ensuing year.—The resignations of Mr. James Sherren from the Court of Examiners and of Mr. F. F. Burghard from the Council were accepted with regret. The vacancy on the Court of Examiners will be filled at the ordinary Council meeting on March 8th.—The President reported that a meeting of Fellows would be held at the College on July 5th for the election of four Fellows into the Council in the vacancies occasioned by the death of Sir Charles Ryall, by the resignation of Mr. Burghard, and the retirement in rotation of Sir Charters J. Symonds and Sir Herbert Waterhouse. Notice of the meeting would be given to the Fellows by advertisement and by circular on March 9th, and March 19th would be the last day for the nomination of candidates. A voting paper would be sent on April 3rd to every Fellow of the College whose address is registered at the College.

SOUTHAMPTON BOROUGH COUNCIL: SALARIES OF MEDICAL OFFICERS.—There was reference in our issue of Jan. 13th (p. 109) to this council's attempt to advertise in the medical press for an assistant medical officer and a school dentist at salaries of £450 each. *The Lancet* and the *British Medical Journal* having declined to publish the advertisement, the council proceeded to advertise in the lay press. Alderman Blatch, chairman of the Health Committee, has stated that a number of applications had been received for the post of dentist, but that only three applications had been received for the post of assistant medical officer, two of which were from unqualified persons. If the selected candidate is qualified he will be appointed. Three dentists have been asked to attend. The council decided to allow the Health Committee to make the appointments. The council also discussed the position with regard to the salaries of the medical officer of health and the chief sanitary inspector. These officers were served, like other servants of the corporation, with notices of a salary reduction of 10 per cent. It was then pointed out by the Ministry of Health that the council could not alter the appointments of these officers without the Ministry's consent. The Mayor now told the council that until the notices had been withdrawn the Health Committee could not ask for the Ministry's consent to the "cut." The committee recommended the withdrawal of the notices. Alderman Kimber said the trouble had arisen because the members of the council were ignorant of the existence of the Medical Officers of Health Act. The salary of the medical officer of health for Portsmouth had been reduced by £150. He moved an amendment that a deputation be sent to the Ministry of Health. Mr. P. V. Bowyer seconded. Mr. T. Lewis, J.P., a Labour member, said a mistake had been made, and the decent thing to do was to correct it by withdrawing the notices. Alderman Dr. Rogers pointed out that the Act referred to was only an amplification of one that had existed for many years. The council had acted first and thought afterwards. Mr. T. McDonnell said that if a deputation were sent they would see how far a Government elected on economy would try to prevent a local authority from economising. The Mayor remarked that at Portsmouth the medical officer had received a far higher salary than the medical officer at Southampton, and had no port sanitary work. The amendment was withdrawn, and the council decided to recall the notices.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.—The next meeting will be held on March 23rd, at 8.30 P.M., at 11, Chandos-street, London, W.1. A discussion will take place in respect to Syphilis and Marriage.

EUGENICS EDUCATION SOCIETY.—A lecture on Intersexuality and Sex Reversal will be delivered by Dr. L. Hogben, at the rooms of the Royal Society, Burlington House, Piccadilly, on Feb. 23rd, at 5 P.M., Major Leonard Darwin presiding. Members of the society and all interested are invited to attend.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting of the College was held on Feb. 6th, Sir Robert Philip, President, in the chair. Dr. James Burnet and Dr. Disney Hubert Dusch Cran were admitted Fellows of the College. Drs. John Farquhar Christie, William Glen Liston, C.I.E., William Nicol Watson Kennedy, O.B.E., Max Lipschitz, and Robert McCall Burnie were admitted Members of the College. Dr. Robert Alexander Fleming was elected a Member of Council of the College in room of the late Dr. J. W. Ballantyne. Intimation was made of a bequest to the College by the late Dr. Harry Rainy of a valuable collection of works relating to Danté, and of a gift to the College by Mr. J. W. Fraser Tytler, W.S., of a bust of the late Dr. James Gregory.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of the Association will take place on Feb. 22nd, at the City Mental Hospital, Gosforth, Newcastle-on-Tyne, under the presidency of Prof. G. M. Robertson. Two discussions are arranged: (1) The Future Policy of the Association as Regards its Nursing Certificate and Examinations; (2) Special Appeal for Funds for the Prevention and Treatment of Insanity, and the Formation of the Council of Mental Hygiene. Superintendents of mental hospitals are reminded that there is a small convalescent fund for nurses who through sickness require assistance in their convalescence.

PRESENTATION TO PROF. MATTHEW HAY.—A committee has been formed for the purpose of presenting Prof. Matthew Hay, M.D., LL.D., medical officer of health for the City of Aberdeen, with his portrait or bust in recognition of the devoted and eminent services rendered by him to the city and University of Aberdeen during the last 40 years, as well as his powerful influence on the progress of preventive medicine and public health throughout the country. The appeal will be signed by Lord Provost Meff and Principal Sir George Adam Smith. Subscriptions, limited to 2 guineas, should be sent to the hon. secretary, Major H. J. Butchart, D.S.O., at Marischal College, University of Aberdeen.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS. At a quarterly committee meeting recently held at the offices of the Funds grants were made to cases in the Benevolent branch for the orphans of officers amounting to £289 18*s.* 11*d.* and grants in the Relief branch for the widows and children of the rank and file, amounting to £717 13*s.* 6*d.* These Funds are for the relief of widows and orphans of commissioned officers, non-commissioned officers, and men of the rank and file of the Royal Army Medical Corps, Special Reserve, Territorial Force, and New Armies, and also for the relief of the children of those who have been so severely disabled in the late war, that they need help for the education of children. Requests for relief should be addressed to the hon. secretary, at the offices of the Funds, 11, Chandos-street, Cavendish-square, London, W. 1.

SUSSEX THROAT AND EAR HOSPITAL.—A feature of the work of this hospital during 1922 was that the governors set themselves out to make their expenditure come as nearly as possible within their probable income. Thanks to the strictest economy, a legacy of £1500, payments from local authorities for such of the school-children under their care requiring treatment at the hospital, and fees for the assistance given to pensioners and other cases from the authorities, this aim has been largely carried out. In the annual report submitted at the general meeting on Feb. 5th the President, Lord Leconfield, however, emphasised from the chair that the hospital did not quite pay its way, and were it not for occasional legacies from former patrons and donations from benefactors the ordinary income would not be sufficient to meet the ordinary expenditure. Annual subscriptions during the year increased by £31 and payments from patients increased from £744 to £817, marking not only appreciation but willingness to pay. The governors referred again in their report to the numerous additions necessary to the hospital in order to make it perfect for the purposes for which it was erected, and while it was stated that the building on the east wing would not be undertaken until the money was received it was hinted that perhaps it might be put in hand next year. In-patients during 1922 numbered 572 and out-patients 1320.

THE Cambridge University Press announce the forthcoming publication of "Problems in Dynamic Psychology: A Critique of Psycho-analysis and Suggested Formulations," by Dr. John T. MacCurdy, Assistant, Psychiatric Institute of New York State Hospitals, and Lecturer on Medical Psychology, Cornell University Medical College, New York.

ASSOCIATION OF ECONOMIC BIOLOGISTS.—A general meeting of the association will be held at 2.30 P.M. on Feb. 23rd in the botanical theatre of the Imperial College of Science, Prince Consort-road, South Kensington, London, S.W. 7. Sir John Russell, F.R.S., director of the Rothamsted Experiment Station, and Mr. H. G. Thornton, head of the Bacteriological Department at Rothamsted, will open a discussion on "Partial Sterilisation of Soil: Present Views as to its Effects and their Causes."

SUSSEX EYE HOSPITAL.—The annual meeting of this hospital was held on Feb. 8th. The expenditure during 1922 amounted to £3051, and only by means of legacies amounting to £1600, against £350 during 1921, were the governors able to balance the accounts. Contributions from patients brought in during last year nearly £500, as compared to £207 in 1921; the number of in-patients was 294, as against 280; and of out-patients 3652, as against 3789.

ST. MARK'S HOSPITAL.—At the eighty-seventh annual general meeting of the governors of St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum, City-road, E.C., held on Feb. 8th, Mr. Robert Holland-Martin, C.B., treasurer, presiding, reference was made to a much-needed extension of the hospital premises on vacant land adjoining the present building. This extension, which would cost about £10,000, would provide accommodation for another 21 beds and a new out-patients' department, as well as for new pathological and X rays departments. During 1922, in which there had been a decrease of £431 in ordinary donations, the hospital had admitted 650 in-patients, of whom 581 had been cured. 3815 attendances had been made by 1130 new out-patients during the same period.

BRIGHTON AND HOVE HOSPITAL FOR WOMEN.—This hospital is one of the oldest of the institutions in Brighton, and was formerly known as the Lying-in Institution. It was founded in 1830, and until 1857 carried on its work in a small house in Middle-street, when it removed to more commodious premises in West-street. It was not until 1896 that surgical work was undertaken; since this time the demands upon the institution increased rapidly. In 1914 new premises were found, but these were soon commandeered by the War Office, and the Women's Hospital has only just been able to take possession. On Jan. 30th Princess Helena Victoria officially performed the opening ceremony. The property has been opened free from debt. In 1922 there were 382 in-patients, 1389 cases were visited in their own homes, and 638 out-patients were attended. As a training school for midwives the hospital has a high percentage of successes among the candidates sent up for the certificates of the Central Board.

ENCEPHALITIS LETHARGICA AND CEREBRO-SPINAL FEVER.—A circular has been addressed to medical officers of health by the chief medical officer of the Ministry of Health stating that special forms of inquiry as to cases of encephalitis lethargica need no longer be filled out. Detailed information has already been supplied in respect of 1250 cases or suspected cases of this disease, and this has formed the basis of report No. 11 (H.M. Stationery Office, 10s.), recently published. Medical officers of health are reminded that the Ministry undertake the examination of cerebro-spinal fluid in cases of suspected cerebro-spinal fever. The research work being undertaken by Dr. E. G. D. Murray for the Medical Research Council on the production of an immune serum for therapeutic purposes has been retarded by the scarcity of material, and pathologists isolating meningococci from the cerebro-spinal fluid, are asked to send cultures of freshly isolated strains to Dr. Murray at the Field Laboratories, Milton-road, Cambridge. Outfits for this purpose may be obtained on application to the Medical Research Council, 15, York Buildings, Adelphi, London, W.C. 2.

INDEX TO "THE LANCET," VOL. II., 1922.

THE Index and Title-page to Vol. II., 1922, which was completed with the issue of Dec. 30th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Feb. 20th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for election of candidates.

PATHOLOGY: at 8.30 P.M.
Communications, &c.:
Dr. C. C. Okell and Miss E. M. Baxter: The Fermentation Reactions of Virulent *B. diphtheriæ*.
Dr. S. C. Dyke and Mr. C. H. Budge: The Inheritance of the Specific Iso-agglutinable Substance of the Red Cells.

Wednesday, Feb. 21st.

HISTORY OF MEDICINE: at 5 P.M.
Presidential Address: by Dr. Arnold Chaplin.
Paper:
Dr. W. Rees: The Social Effects of the Epidemics of the Fourteenth Century.

Thursday, Feb. 22nd.

UROLOGY: at 8.30 P.M.
Papers:
Mr. Ralph Thompson: The Propriety of Attempting Primary Union in Cases of Suprapubic Operations on the Bladder and Prostate.
Mr. Ogier Ward: Case of Air Embolism occurring during the course of urethroscopy.

Friday, Feb. 23rd.

STUDY OF DISEASE IN CHILDREN: at 4.30 P.M.
Clinical Meeting at Great Ormond-street Hospital for Sick Children.
Cases will be shown by the Staff.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Sir George Buchanan: Recent Work of the International Health Offices.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.
THURSDAY, Feb. 22nd.—5 P.M., First Milroy Lecture:—Dr. W. G. Savage: Canned Foods in Relation to Health.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W. (See Royal Society of Arts below.)
TUESDAY, Feb. 20th.—8.30 P.M., Dr. Godfrey Carter: The Medical Evidence in a Recent Murder Case (to be followed by a discussion). The Right Hon. Lord Justice Atkin will preside.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, Feb. 21st.—8 P.M., Mr. C. Ainsworth Mitchell: Handwriting and its Value as Evidence. Sir Richard Muir will preside and members of the Medico-Legal Society can obtain cards of invitation from Mr. Ernest Goddard.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.
THURSDAY, Feb. 22nd.—5.30 P.M., Dr. G. A. Sutherland: Cardiac Problems in Adolescent Life.
(At the Western General Infirmary, Marylebone-road, N.W.)
Fee for the course, £1 1s.; single lecture, pro rata.
TUESDAY, Feb. 20th.—5 P.M., Dr. B. Myers: Nutritional Disturbances of Infancy—Failure to Gain Weight, and Dyspepsia.
FRIDAY.—5 P.M., Dr. B. Myers: Decomposition (Marasmus, Atrophy, Malnutrition).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Feb. 19th.—11 A.M., Mr. Maingot: Surgical Wards. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Addison: Surgical Wards.
TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 12 noon, Dr. Burrell: Chest Cases. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12 noon, Dr. Burnford: Pathological Demonstration. 4 P.M., Mr. Donald Armour: Whitlow and its Treatment.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 4 P.M., Dr. Castellani: Tropical Dermatology.
FRIDAY.—12 noon, Dr. Flett: Radiology. 2 P.M., Mr. Banks-Davis: Diseases of Nose, Throat and Ear. 3 P.M., Mr. Sinclair: Surgical Cases.
SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
TUESDAY, Feb. 20th.—4.30 P.M., Mr. L. Phillips: Investigation and Treatment of Dysmenorrhœa.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: JAN.–MARCH, 1923.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, Feb. 19th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Lecture:—The Control of Ocular Movements: Mr. Leslie Paton.
TUESDAY, Feb. 20th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—The Significance of Ocular Phenomena: Dr. Risien Russell.
THURSDAY, Feb. 22nd.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Lecture:—The Symptoms of Cerebral Tumour: Dr. Gordon Holmes.
FRIDAY, Feb. 23rd.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Lecture:—Aural Vertigo: Mr. Sydney Scott.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
NEURO-PATHOLOGY.
MONDAY, Feb. 19th.—12 noon, Tissue Reactions in Disease of the Nervous System: Dr. J. Godwin Greenfield.
N.B.—A Course of Lectures in the Anatomy and Physiology of the Nervous System will be given if there are sufficient entries for it.
The fee for the whole Course, including Anatomy and Physiology, is £12 12s.; but these Lectures may be taken separately for a fee of £4 4s. Course without Anatomy and Physiology Lectures will be £10 10s. Any part of the Course may be taken separately at a special fee. Special arrangements will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.
C. M. HINDS HOWELL, Dean of Medical School.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Feb. 22nd.—4 P.M., Dr. Heald: The Benefits and Uses of Electro-Therapeutics.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
THURSDAY, Feb. 22nd.—5 P.M., Chesterfield Lecture:—Dr. W. Knowsley Sibley: Seborrhœa and Psoriasis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
TUESDAY, Feb. 20th.—4.15 P.M., Mr. H. H. Rayner: The Treatment of Empyema.
FRIDAY.—4.15 P.M., Mr. J. Morley: Applied Anatomy of the Gastro-intestinal Tract.

ST. MARY'S HOSPITALS, MANCHESTER. POST-GRADUATE LECTURE (Whitworth-street West Branch).
FRIDAY, Feb. 23rd.—4.30 P.M., Dr. Bride: Contracted Pelvis.

SALFORD ROYAL HOSPITAL. POST-GRADUATE LECTURE.
THURSDAY, Feb. 22nd.—4.30 P.M., Mr. Jefferson: Some Points in the Surgery of the Spine.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Feb. 21st.—4 P.M., Colonel L. W. Harrison, R.A.M.C. (retd.): The Organisation and Administration of Venereal Disease Schemes.

Appointments.

MITCHELL, A. O., M.R.C.S., L.R.C.P.Lond., has been appointed Resident Medical Officer to the Croydon Borough Hospital.
RUSSELL, V. I., M.D., B.S. Lond., Assistant Obstetrician to the Elizabeth Garrett Anderson Hospital.
SHARPLEY, J. E., M.R.C.S., L.R.C.P.Lond., reappointed Medical Officer of the Blyborough District, Gainsborough.
SINGLE, M., M.B., Ch.B.Manch., Junior House Surgeon at the Manchester Royal Eye Hospital.
Certifying Surgeons under the Factory and Workshop Acts: KYLE, V. B., M.D.Dub. (Torrington); ATTENBOROUGH, C. H., M.B., B.S.Lond. (Camberley); and GAMESON, L., M.B., B.Ch. Oxf. (Okehampton, Devon).

Vacancies.

For further information refer to the advertisement columns.
Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.
Bradford Royal Infirmary.—Two H.S.'s. £150.
Burnley County Borough.—M.O. for Ven. Dis. £850.
Cardiff, King Edward VII. Welsh National Memorial Assoc.—Asst. Tuberculosis P. £500.
Derbyshire Hospital for Sick Children.—Res. M.O. £150.
Enfield, Middlesex, War Memorial Hospital.—Hon. Radiologist.
Greenwich Metropolitan Borough.—M.O. for Maternity and Child Welfare Work. £643.
Hospital for Women, Soho-square, W.—Res. M.O. £100.
London County Mental Hospital Service.—Seventh Asst. M.O. £449.
London Homœopathic Hospital, Great Ormond-street, W.C.—Res. M.O. £100.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester Children's Hospital, Pendlebury.—Res. M.O. £80.
Manchester University.—Demonstrator in Path. £300.
Manchester, Whitworth Park Hospital.—Res. Surg. O. £250. Also H.S.'s. £100 each.
Nottingham General Dispensary.—Res. Surg. £300.
Rochester, St. Bartholomew's Hospital.—Hon. Radiologist. £52.
Rotherham Hospital.—Jun. H.S. £150.
Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. £150.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. P. to Skin Dept.
Southampton, Royal South Hants and Southampton Hospital.—Jun. H.S. £150.
Swansea General and Eye Hospital.—H.P. £200. Also H.S. for Ophthalmic, &c., Depts. £200.
West End Hospital for Nervous Diseases, Regent's Park, N.W.—Senior H.P. £150. Also Jun. H.P. £100.

Births, Marriages, and Deaths.

BIRTHS.

CREASY.—On Feb. 6th, at Ashley-gardens, S.W., the wife of Dr. Rolf Creasy, jun., of a son.
GEBBIE.—On 9th inst., to Dr. and Mrs. N. Gebbie, Boston Bank, Hyde, Cheshire—a daughter.
GRANT.—On Feb. 6th, at the Manor House, Wilnecote, Tamworth, the wife of Dr. J. V. L. Grant, of a son.
JACKSON.—On Feb. 6th, at Hatherley-road, Sidcup, the wife of Dr. T. Jackson, of a daughter.
MARTYN LOBB.—On Feb. 5th, to Louise Josephine, the wife of E. L. Martyn Lobb, M.S., F.R.C.S., of 11, King-street, Maidstone—a daughter.
VERDON.—On Feb. 2nd, at a nursing home, Cambridge, the wife of Captain P. Verdon, I.M.S., of a son.

MARRIAGES.

DIXON—GOODALL.—On Feb. 2nd, Gerald Conroy Dixon, B.A. Oxf., M.B., Ch.B. Manch., to Margaret Goodall, of Belmont, Dunfermline.
KIDD—CHALMERS.—On Feb. 7th, at St. Columba's (Church of Scotland), London, Dr. W. Shirley Kidd, of Harrogate, to Isla Scott Chalmers, of Addison-road, London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

THE TRAINING OF WELFARE SUPERVISORS.

BY A. C. MARSHALL, M.A., LL.B.,
PRESIDENT OF THE WELFARE WORKERS' INSTITUTE.

THE plea for the establishment of a centre for training welfare supervisors is opposed to the best traditions of the professions. The various universities are established to train doctors, lawyers, engineers, and so forth. Why should they not be capable of training aspirants to the youngest of the professions, that of industrial welfare supervisors? That they suffer under no disability in this respect is shown by the close connexion there has been for several years between the Welfare Workers' Institute and the various universities with special courses in social science. And through such close coöperation between those actually engaged in the work and the universities splendid results have been attained. Industrial welfare work, is after all, one of the many agencies for the improving and uplifting of humanity, and those guiding it must have a broad outlook and a wide general culture. There is a distinct danger in permitting any centre established by industrial magnates to control the training of entrants to the profession. In the best interests of the welfare movement, industry as a whole, and the community generally, the training of welfare supervisors must remain unquestionably in the hands of the universities.

The Welfare Workers' Institute.

The Institute is naturally keenly desirous that all entrants to the profession shall maintain a high standard of qualification and training. It therefore stipulates that anyone wishing to become a member must hold the diploma or certificate of one of the training courses approved by the institute, unless possessing other qualifications which in the opinion of the Executive justify an exception being made. We cannot yet, of course, control the admission of supervisors into industry, but employers of labour and others interested would be wise if they insisted that all entrants conformed to the regulations for admission to the Institute. In that would lie a big safeguard that the movement in their works should proceed on sound lines.

Training Courses.

The Institute has approved the training courses provided by the following universities: Birmingham; Bedford College, London; Bristol; Edinburgh; Glasgow; Leeds; Liverpool; London School of Economics; College of Technology, Manchester (long course only); St. Andrews University (Dundee College); Woodbroke Settlement, Birmingham.

The London School of Economics gives special attention to welfare students, their practical work and coaching being undertaken by experienced welfare workers. Glasgow University provides the only recognised course, the lectures for which are all given in the evening. They are especially intended for social workers who are already in work and who wish to become more highly qualified.

Birmingham is especially well situated for those who wish to study the growth of the industrial system from the domestic workshop to the most highly organised industrial concerns. Woodbroke is not a settlement in the ordinary sense of the word, but a college for the study of religious and social problems. It caters especially for the social student who has done a good deal of practical work, or for the tired social worker who wishes to leave work for a short time of quiet study. Bristol has an interesting course and, like the London courses, has a part-time welfare tutor who is a member of the Institute. Edinburgh has not the opportunities for extensive industrial training afforded by some of the universities, but gives the student intensive training in particular factories. Leeds has a unique system of training in the economics of the different important trades of the country, such as engineering or textiles.

Liverpool University, which works in close conjunction with the local branch of the Institute, caters especially for those students who are particularly interested in psychology, and has an admirable system of coöperation with the various municipal and charitable societies. Courses of lectures and practical work are carried out by welfare workers. St. Andrews University, Dundee, makes a special point of introducing the student to the practical working of the machinery of government of a modern city.

The College of Technology, Manchester, has only recently established the full course required by the Institute, but can afford the student admirable facilities for observing the principles of welfare work in many kinds of factories. This course, or the Leeds course, should be chosen by students wishing to take up work in textile factories. Bedford College, London, has only recently been recognised after representations made by the Institute with regard to practical work and welfare lectures.

Social Studies Board.

Through the Joint Social Studies Board of the universities and the activities of the Welfare Workers' Institute, there is an active mutual interchange of ideas regarding the various courses, so that, while individuality is maintained, the courses are conducted in a broad, general way on similar lines. It is thus obvious that the establishment of a special centre for training welfare supervisors would be superfluous. Far better would it be for benevolently disposed individuals to strengthen the social science departments of the universities by endowments, as has recently been done in the case of Liverpool by the establishment of the Charles Booth Chair of Social Science.

JENNER CENTENARY COMMEMORATIVE EXHIBITION.

THE exhibition of Jenner relics now on view at the Wellcome Historical Medical Museum, 54A, Wigmore-street, London, contains numerous objects of interest in connexion with Jenner and his work. Prominent among these are various original coloured drawings of vaccine pustules made for Jenner, and a set of reproductions of Kirtland's coloured drawings illustrating vaccination and variolation from the second to the sixteenth day, the latter series having been presented to the Museum by Sir Dawson Williams. Copies of the first (1798) and second (1800) editions of the "Inquiry into the Causes and Effects of the Variolæ Vaccinæ," may be seen, together with foreign translations and works which followed its publication, and various books dealing with the sum of knowledge concerning small-pox prior to Jenner's great experiment. Numerous autograph letters relating to the supply, use, and results of vaccination have been collected; among them are several referring to the grants proposed and made to Jenner by Parliament. An interesting series of caricatures and cartoons, in the coarse but telling manner of the early nineteenth century, illustrates the bitterness of the anti-vaccination movement; included among them is James Gillray's satirical drawing "The Cow-pox, or the wonderful effects of the new vaccination," showing small cows sprouting from various parts of the bodies of vaccinated persons. Of more personal interest are Jenner's favourite armchair, in which his fatal seizure came upon him, and his original lancets and scarificators, together with pocket scales, cupping-glass, seal, walking-stick, snuff-box, &c. A considerable number of portraits of Jenner has been assembled; these include oil paintings, engravings, and line and wash drawings, together with a handsome, though damaged, miniature in wax, modelled from life by T. R. Poole in 1808 and set as a medallion. The bronze group by Monteverde, of which we gave an illustration in our issue of Jan. 20th, occupies the centre of the space reserved for the exhibition. The exhibition will remain open for several months.

IN MEDICAL TOUCH WITH RUSSIA.

Dr. Melville D. Mackenzie, reporting to the Friends' Relief Committee (10, Fetter-lane, London, E.C. 4), states that he has opened a bacteriological laboratory at Buzuluk, where during the first seven weeks 2245 examinations have been made. Its presence is greatly appreciated by the local doctors, who are learning to employ it as a means of diagnosis. With a view to getting full use made of the laboratory and to invigorate the local medical work, a series of weekly demonstrations and lectures have been given by the medical officer on Monday nights. All the medical practitioners in the town are invited; a lecture is first given on some special subject and the remainder of the evening is spent in discussion. These meetings are appreciated by medical men who have had no opportunity of getting into touch with recent medical work since 1914. The subjects dealt with have been the use of a laboratory for diagnosis, various special groups of bacteria, and outlines of anti-tuberculosis measures. A local doctor is reading a paper on the treatment of typhus, and the local surgeon is following this by a paper on the surgical complications of typhus fever.

It is difficult, writes Dr. Mackenzie, to imagine the desire for new knowledge that results from starvation of all forms of literature for a period of eight or nine years. Scientific men in England may be glad to help by making it possible for the doctors working in these outlying districts to obtain books and journals. Any such gifts should be in the form of money, as none of the doctors at Buzuluk can read English.

A lecture on religion and medical sociology will be given at 8 P.M. on March 2nd at 11, Chandos-street, London, W., by Dean Inge. The lecture is being held under the auspices of the Marylebone Division of the B.M.A. and medical men and women will be welcomed.